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C O N F I D E N T I A L

PROBLEMS OF TIMBER PRODUCTS PROCUREMENT
DURING WORLD WAR II, 1941-1945

by

Ben M. Huey
B.S., Colorado A. and M. College, 1942

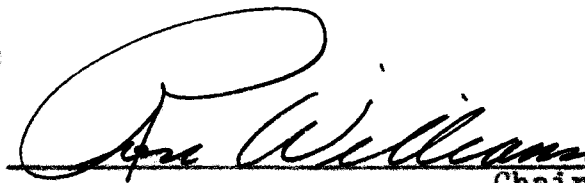
A Report
Prepared for the U.S. Department of Defense,
Army, Corps of Engineers
by the
U.S. Department of Agriculture,
Forest Service

Presented in partial fulfillment of the
requirement for the degree of Mas-
ter of Science.

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FOREWORD

This is one of a series of reports resulting from the military timber products studies made by the Forest Service for the Corps of Engineers. It is an analysis of problems that arose to delay or otherwise modify the orderly flow of timber products from the woods to the military supplier or consumer. Other reports to follow include:

- (1) An analysis of the total volume of timber products requested through the Central Procuring Agency, Corps of Engineers, by all war agencies during the war years, and
- (2) a final detailed report of estimated total consumption of all timber products for military purposes during World War II.

The timber products studies are financed by the Corps of Engineers.

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CHAPTER I

INTRODUCTION

I. PURPOSE

The purpose of this report is to identify the problems which were obstacles to satisfactory timber products procurement during the World War II emergency, and to determine why these problems arose. A knowledge of the causes and results of these problems should be helpful in planning procurement and production changes to minimize these difficulties in the future.

II. SCOPE

This report deals with the problems that arose in obtaining timber products for military and related uses during 1941-45. In the first part of this period procurement was decentralized; whereas, later, the Central Procuring Agency was charged with the responsibility of procuring timber products. The agencies and their contractors, covered by this report, are the following: Army (including Airforce), Navy, Maritime Commission, Defense Plant Corporation, War Shipping Administration, Lend Lease.

The satisfaction of requirements of timber products needed for war must be viewed in the dual light of both

production and procurement. It is a production problem that adequate and satisfactory amounts of all needed timber commodities are manufactured at the right time for needed uses. In this category are the problems of adequate forest resources, sufficient plant capacity, and manpower, and equipment requirements. On the procurement side are the problems of organization and personnel as well as administrative difficulties, procurement procedure, and problems of improper specifications. In short, procurement problems deal with the difficulties of dividing among the essential uses a given amount of timber products. Production problems are those encountered in creating that "given amount of timber products."

It is apparent that where production problems are at the heart of a procurement difficulty, the smoothest functioning procurement organization could do little to alleviate the situation. Nevertheless, there were many instances during the last emergency when the principal difficulty in obtaining certain timber products was due to procurement problems and not production factors. However, since the problems of procurement were often the result of difficulties in other fields of supply, this report includes an analysis of the entire field in order to present the procurement factors in their proper setting.

III. THE TIMBER PRODUCTS INDUSTRY

Warfare has developed into a contest of resources and mechanical ingenuity. Wood is one of those resources and the art and technique of converting forest trees into useable, wood commodities requires technical skills and equipment that are just as important to a war effort as the production of food, munitions, or clothing. Nearly all uses for wood, either newly developed or old, sooner or later are pressed into service in waging a war. In order to understand the problems of production and procurement of these timber products, the nature of the industry must be understood.

Because of the complexity of the timber products industry due to the wide diversity of products, the geographical distribution of the timber resource, the great variety of tree species, each having diverse mechanical and physical properties as well as the many different grades of lumber within each species, the multitude of independent producers, and the intricate pattern of distribution to consumers, it is no wonder that problems arose when it became necessary to shift the bulk of the industry's output into channels for military use.

At the start of mobilization for defense in 1941, the nation was in a peculiarly favorable situation for the developments that were to follow. A long period of depressed

construction had built up a full supply of lumber stocks amounting to approximately eighteen billion board feet. Also, the grade pattern within these inventories was almost perfectly complete. It was only this fortunately large buffering supply of stocks that enabled the quick delivery of construction materials to expanding military installations and war contractors. By 1945, total lumber stocks were reduced to four and one half billion board feet and these consisted essentially of pipe-line stocks and a broken assortment of sizes and grades.

Sawmill capacity within the industry has traditionally been in excess of needs. In fact, excess capacity has been a source of instability and economic weakness in the industry. In 1947 there was a total of 53,109 active and 8,442 idle sawmills. This contrasts with about 39,000 active mills in 1942. The increase was due largely to the favorable price of lumber. However, some production bottlenecks developed during the war in facilities other than sawmills. Lack of dry kilns slowed lumber production for a time. Treating plant facilities as well as shortages of preservatives slowed the treatment of railroad ties, transmission poles, and piling. Production of veneer and plywood has never been able to keep pace with demands. In 1949, the softwood plywood industry was comprised of 57 plants on the west coast, while

hardwood plywood and veneer is produced in the East in nearly 500 plants.

The pattern of sawmill production is an important consideration of the lumber industry. About ninety-one percent of the active mills are located in the East, but the nine percent of the mills situated in the West produce nearly half of the nation's lumber. The contrast of production by mill size is also remarkable. A quarter of the total production in 1947 was sawed in but 165 of the largest mills. Half of the total production was produced in but 3.5 percent of all the mills. At the other extreme, 15,000 of the smallest mills produced but a negligible amount of lumber. Mill size and numbers are important in production controls. The extreme concentrations, both productively and geographically, in the Pacific Northwest is misleading, however, because that production is all of softwood species, while the hardwood lumber produced in the widely scattered and numerous eastern mills is a vital war material.

Lumber is the foremost product in volume cut from our forests. About seventy percent of the sawtimber used is consumed as lumber. The veneer and plywood industry, although closely integrated with the lumber industry through a common source of raw material, is otherwise quite distinct. Without reflecting relative importance, log consumption in the

veneer and plywood industry in recent years has totaled only about five percent of the log consumption for lumber, but the quality of logs used for veneer and plywood is much higher than those required for lumber. The practical operating capacity of these two industries is set by a combination of (1) supplies of suitable timber, (2) plant capacity, (3) availability of manpower for logging and manufacturing operations, and (4) available supplies of logging and manufacturing equipment, repair parts, etc. Output of logs is the basic determinant of the capacity of both industries.

Lumber production has never reached the peak it achieved just after the turn of the century. Mills then were operating in virgin timber and demands for housing and other uses in settling the West enabled a production of forty-four billion board feet. During the depression 1930's production was in the twenty billions of board feet. In 1941 and 1942 lumber output rose to thirty-six billion feet for each year, but production difficulties in the war economy reduced the production to twenty-eight billion feet in 1945.

The total production of veneer, including that marketed as plywood, has approximately doubled since 1935. In 1947 the all-veneer production totaled 13.4 billion square feet. The growth of the softwood plywood industry accounted for much of this increase, having quadrupled its output in

this period to reach a production of two billion square feet (3/8-inch equivalent basis) in 1949. The proportion of softwood and hardwood veneer in terms of log consumption are now approximately equal.

Railroad ties are a vital necessity for trail transportation which is so imperative in wartime. No satisfactory substitute has been found to displace wood in this use, although preservative treatment has lengthened the service-life of ties from a life expectancy of five to six years when untreated to fifteen to thirty years when treated. This materially conserves on requirements by reducing the replacements needed.

It takes about three thousand ties to lay a mile of main line track. Oak, the predominant species used, accounted for about a third of the total production in 1949. Next in order were southern pine fourteen percent, gum thirteen percent, Douglas fir nine percent, and thirty-one percent in other species. Perhaps eighty to ninety percent of total production of cross ties is indicated in the figures of installed ties of United States railroads. Replacements and new installations during the 1935-49 period averaged about forty-nine million ties annually. That figure was swelled to fifty-seven million in 1942 by the war emergency, but steadily dropped thereafter to only thirty-six million in 1949. Production of sawed ties and lumber are alternative operations

and tie production in a given mill often varies widely over time, depending upon relative price and market demands between ties and lumber.

A large amount of wood volume is taken from our forests and used without much change in form. Some of these commodities are directly important to a war effort. For example, the piling used for wharfs, and the utility poles used at camps, posts, and stations. Other round or split wood commodities have various degrees of importance and are usually indirectly connected with military operations. Examples of these are: mine timbers, the importance of which is obvious; posts, for farm fencing which is a part of food production; and fuel wood. Wood for fuel is second only to lumber in the commodity drain from our forests. However, its use as a substitute for other combustibles during both World Wars was never fully exploited.

Most poles and piling are handled by concentration yards where the output from a rather wide territory is typically concentrated. These yards are mainly permanent establishments with seasoning facilities, pole handling machinery, and equipment for treating with wood preservatives. In these concentration yards, pole shaving machines are used for removing bark and smoothing pole surfaces, and the poles are roofed, galled, bored, and incised prior to treatment with preservatives. Preservative equipment used for treating

these products ranges from simple dipping tanks for butt treatment to full-length, complex, pressurized cylinders. About ninety-five percent of all utility poles used are treated with preservatives, while but sixty percent of the piling consumption is treated, explainable by the use of considerable quantities of untreated hardwood piles.

Pole production during the 1935-49 period varied from about two million pieces in 1943 to nine million poles in 1947. Southern pine usually accounts for three-fourths of the pole production, with western red cedar and Douglas-fir equally divided to make up a sixth, and the balance of other species. Piling averages only about fourteen percent of pole production, which varied from 12.7 million linear feet in 1935 to a wartime peak of 42.2 million linear feet in 1942. Like poles, three-fourths of the piling used is southern pine, followed by a fifth of Douglas-fir, and the rest of other species.

Several miscellaneous timber products industries are insignificant in terms of wood-volume output, but they rose to dramatic bottlenecks during the war effort. The problems they caused will be treated later, but they are mentioned here to complete the survey of the timber products industry. Among these miscellaneous timber products industries are the cooperage industry, the wood turnery industry, shoe lasts and related products manufacture, the excelsior industry,

and commodities made of cork.

To produce adequate timber products is but part of the task of satisfying demands for these commodities. Across the complex pattern of production must be laid the equally diversified web of consumption with its myriad spread of specifications and species demands plus the equally important time element of delivery. Furthermore, the producing sawmills and plywood mills, as well as the other timber products plants, are located where the trees grow and this does not usually coincide with the heavily populated consuming centers. The marketing machinery for lumber is the most elaborately developed, while other timber products usually follow a more direct route to the consumer. In any case, the existing marketing machinery cannot be circumvented by wartime distribution methods without serious hardship to the industry either during the emergency or in reconversion later to peacetime activity.

Wholesale lumber dealers may be roughly grouped into two classes, the "yard" wholesalers and the "office" wholesalers, the terms being practically self-explanatory. Yard wholesalers are divided into those operating concentration yards and those who operate distribution yards. There are about 450 concentration yards, located chiefly in the South, where they centralize the output of numerous small sawmills. They may sort, grade, season, surface, and remanufacture the

raw lumber they receive to enable them to ship seasoned lumber in carload lots by species, size and grade as desired.

Small sawmills are not capable of performing this function. Wholesale distributing yards are generally located in some center of lumber consumption. The distributing yard buys carload lots of seasoned, well-manufactured stock from manufacturers of recognized standing, puts the lumber in stock and then sells it to his trade in industry or to retail outlets.

The office wholesaler operates no yard at all. He facilitates shipment direct from producer to buyer, and is generally situated in the consuming territory. A large-scale, office wholesaler may have staffs of salesmen and buyers and a traffic department to expedite shipments. He earns his usual profit in selling at a margin above costs, but may finance sawmills, a practice which is quite common. Commission salesmen perform services halfway between the wholesaler and a salaried sales force of the producer. By this means the sawmill operator can maintain customer contact by direct invoicing, thus keeping the identity of the mill before the customer. The commission man is usually recognized as the representative of the manufacturer and may represent two or more producers of the same or different species. There are nearly six thousand lumber wholesale distributors and commission men.

CHAPTER II

PROBLEMS OF THE PRODUCER OR SUPPLIER

PRODUCTION PROBLEMS

Early in the defense program the War Production Board and the industry alike shared the impression that lumber would continue to be available in any needed amount for any war purpose, and that it could serve as a substitute for the more critical metals. Misinformed confidence in abundance even permitted civilian wood-using industries to expand. This surface calm was broken in 1942 when the transition from surplus to scarcity erupted with alarming seriousness. A little later, as the military position changed, the great demand for construction lumber gave way to an almost insatiable appetite for shipping lumber with which to supply the offensives under way on world-wide war fronts.

The shortage in volume of lumber and other timber products somewhat obscured certain quality shortages that occurred early in the emergency and in many cases existed all through the war and were never truly eliminated. Examples of this type of shortage were aircraft-quality Douglas-fir and spruce lumber, birch and mahogany veneer for plane construction, oak for ship building, and many specialty items of exacting quality demands.

Over all of the production problems hung a general lack of appreciation of the problems of the industry by those outside it and an equal lack of appreciation of war demands for timber products within the industry. This section of the report aims to outline the major problems of production encountered during the last emergency. They indicate the need for a high order of production planning as a wise course for future wood-for-war production.

THE PROBLEM OF FOREST RESOURCES

Production of timber products requires forest resources. Authorities¹ judged the forest resource situation was serious in this country before the war, and certainly the accelerated drain during the emergency in no way bettered the situation. To many "victory" in World War II is taken as synonymous with "sufficiency." That the war effort goal was reached seems to obscure the difficulties of obtaining the necessary timber products, shades the fact that better timber and more desirable species could have added greater efficiency to the struggle, and generally blanket as unimportant the depletion of our forest resources.

¹A National Plan for American Forestry, Senate Document #12, 73rd Congress, 1st Session, 1933, and the Report of the Joint Committee on Forestry, Senate Document #32, 77th Congress, 1st Session, 1941.

For the country as a whole the problem of inadequate stumpage for construction lumber was not high on the list of factors affecting production. There were localities where mills were forced to cease operation, but there were a great many more places where logs became difficult to get and those that were obtained, in most cases, were of inferior quality. Satisfactory Douglas-fir peeler logs were especially in short supply. The war-time drain of these high-quality logs around Puget Sound was not to be fully appreciated until after the conflict. Currently, some plywood mills in that area are being forced to seek their log supply elsewhere.

Presently inaccessible timber deters production just as effectively as the lack of forest resources. In certain sections of the country, especially the mountainous area of the west, there are considerable quantities of desirable timber that have remained unavailable, largely because of the excessive cost of logging it. The major cost in such operations is the expense of road construction into these difficult-to-reach areas. In June, 1942, Congress passed the Access Roads Act which provided funds which could be used for improving existing roads or the construction of new roads to tap additional timber resources urgently needed in the war. Five months later, twenty-six projects were approved totaling 354 miles for an estimated expenditure of about 1.3 billion dollars. These projects opened up 10.8 billion board

feet of standing timber. It was reported that this materially aided production. The program is commendable in bringing a larger forest area into commercial production and management, relieving some pressure on the more accessible and over-cut areas, and provided immediate results in increased production of quality raw materials from virgin stands. The Forest Service is asking Congress for five million dollars to build access roads in the next budget period.

Quality hardwood stumpage and certain softwood species and grades were important resource problems during the emergency. The big problem and bottleneck in the production of many wood specialty items was the lack of suitable raw materials. For use in a number of these items, the species and quality specified cannot be readily substituted. The fact that this type of production problem arose early in the war and most of them either remained unsolved or were alleviated with much difficulty leads to the conclusion that this resource deficiency deserves careful consideration. An important aspect of the problem is the length of time it takes to grow timber. The wood uses in which inadequate and unsatisfactory forest resources posed a problem are listed below:

LIST OF CRITICALLY SHORT TIMBER PRODUCTS IN WORLD WAR II*

<u>Item</u>	<u>Remarks</u>
Hickory Specialty Items Ski blanks, handle blanks, picker sticks, shunt poles, ladder rungs	Timber is scattered; before war most of logs were hauled to mills by farmers. Shortage of farm labor and low ceiling prices on hickory logs adversely affected production of logs which was bottleneck in producing these items. Picker sticks for textile industry and shunt poles for railroad industry were taken in large volume by England on Lend Lease.
Ash Specialty Items Lifting tool handles Boat oars	Ash timber suitable for these uses getting scarce. Problem same as hickory.
White Oak Ship timbers Truck body material	Oak timber suitable for ship timbers not available in large quantities. Used laminated timbers during war to supplement supply. Truck body lumber specifications were rigid and requirements higher than supply. Finally modified specifications.
Walnut Gun stock blanks	Trees are scattered. Difficulty in meeting requirements due to specialized industry, large requirements and scattered timber.
Yellow Poplar Aircraft veneer Aircraft lumber	Supply timber suitable to produce clear long lengths is limited.
Dogwood and Persimmon	Timber is scattered and was usually supplied by farm labor before war and problem was same as for hickory. Lend Lease took large quantities to British textile industry.

*From a letter in the files of the Corps of Engineers.

Port Orford Cedar
 Battery separators
 Boat planking

Supply of timber diminishing rapidly. Is only wood suitable for certain technical battery separators of which large quantities were required by England for direct military purposes. Other woods could be used for boat planking and much of the boat planking was produced from logs that would not make battery separators.

Imported Woods
 Mahogany for planes and boats
 Teak for ship decking
 Balsa for flotation equipment
 Raw cork for insulation and gaskets
 Lignum Vitae for underwater bearings

All of these items were in tight supply and requirements had to be adjusted downward to meet supply.

Maple
 Shoe lasts
 Die blocks
 Veneer logs

Chestnut
 Tanin extract

All chestnut has been killed by blight and remaining standing dead chestnut trees getting scarce.

Locust
 Insulator pins

Requirements were high for a while and price of locust cordwood was out of line with pulpwood prices which discouraged production. Timber is scattered but supply is ample.

Clearheart Red Cypress

Supply limited. Especially timber to produce a clear wide and long lengths.

Southern Pine
 Vertical grain ship decking

Douglas Fir
 Ponton chess
 Ship decking
 12" to 16" widths

Ship plank
 12" widths
 "C" & Btr Clear
 12" and wider
 Wood Stave Tank and Pipe Stock

Ponderosa Pine
 "C" Select and Btr.
 All sizes

Sugar Pine
 "C" Select and Btr.
 Pattern Stock
 All sizes

Port Orford Cedar
 Alaskan Yellow Cedar
 Boat Stock
 All sizes

Western Red Cedar
 Poles
 Class 3 & larger, 45' and longer

Preservative treated lumber,	Insufficient treating capacity
Piles, poles, all	to meet demand during World
species	War II. Capacity has not been
	materially increased.

Kiln Dried lumber	"	"	"
All species			

THE PROBLEM OF MANPOWER SHORTAGE

Lumber production was affected early in the war by manpower shortages and the problem remained critical until after V-J Day. For at least the latter half of this period the manpower shortage was by far the most serious immediate problem facing the industry.

The shortage was due both to a lack of workers and to the lowered effectiveness of those remaining in the industry. The problem was universal in that all types of mills and all sections of the country were affected. Although manpower shortages were experienced in virtually every industry there is good reason to believe that the lumber industry was particularly at a disadvantage in coping with the manpower problems. The reasons for this are partly inherent in the lumber industry and partly the result of the war-time complex of industrial, military and agricultural activities in which lumber production was rather unsuccessfully competing for a position of comparable essentiality. There were three major causes of the manpower problem; they are: (1) Migration from lumber to other industries, (2) Military enlistments and Selective Service inductions, and (3) Absenteeism and turnover.

Selective Service losses, especially toward the last, were extremely serious. The industry was at a particular disadvantage in the following respects. In the woods, even more than in the mills, young, able-bodied men occupied a large number of positions which could not adequately be filled by older workers. Few other industries are as arduous and dangerous as logging. This fact explains an important part of the woods labor problem when it is considered that the draft removed virtually all full-time woodsmen under the

age of twenty-six and a large proportion of all full-time workers under thirty. The impact of the draft on the lumber industry, particularly the woods industry, was increased by the fact that lumbering is predominantly a rural industry, competing in war-time with agriculture for its labor. Rural draft boards, acting under the Tydings amendment, gave a large share of their deferments to young farmers and had to make up the difference by drafting woodsmen. When farmers were drafted, lumber production was often affected since it is common practice for farmers to engage in a sideline of logging and lumbering in slack seasons. One of the most serious aspects of this general problem involved the removal of key workers, especially small operators whose loss usually threw from two to twenty more employees out of lumber production.

Migration of a very large number of lumber company employees was of extreme importance in curtailing output. The reasons for migration lies in the actual and imagined disadvantages in the life of a lumberman, coupled with the real and imagined advantages of a "war plant" job. Recruitment activities of Federal Agencies and war plan agents were persistent and widespread. The lowliest workers in the most remote places were repeatedly sought with offers of almost fabulous pay, paid transportation, and negligible expenses. Important inducements were the legends (often substantiated)

of easy work and featherbedding, unlimited overtime and other advantages.

Absenteeism and turnover among lumber workers was a very serious problem. These factors are traditional in both woods and mills, but during the war, losses mounted out of all reason in many cases. Some claimed that absenteeism jumped when wages went up, others looked to increased wages as a solution to the difficulty. However, the average lumber worker in the average camp or mill town seemed to be more demoralized than spurred on to more work by a big pay check. In any event, pay rates are a key factor affecting production and are involved in union activity and government policy, aside from affecting the bargaining position of the industry.

In summarizing, it might be said that the particular and rather peculiar requirements of the industry were not understood, nor were preventative steps correctly aligned with the problem, with the result that adequate and realistic aid was not extended by agencies controlling manpower factors.

In the first place, a large segment of the lumber industry is primarily a small-unit industry more comparable to farming in many respects than to industrial organization. Only a few operators can reasonably be expected to respond to, or utilize, the type of controls and facilities set up

for ordinary units. Their lack of powerful political or industrial representation was a great disadvantage.

The War Manpower Commission, with the United States Employment Service, exercised great authority through its control of labor, but it is not apparent that any activity of this agency was to the positive widespread advantage of lumber production. Labor stabilization orders were generally a one-way road permitting loss of workers from lumber mills to higher paid, easier occupations. Ineffective controls permitted them to leave an occupation which had no counterbalancing inflow of satisfactory labor. The only counterbalancing effect was the use of abnormal sources of labor such as women, children, cripples, prisoners of war, and foreigners. The numbers of workmen in the industry toward the end of the war were no indication of the actual labor shortage. The cream of the labor had been gone for months and years. Woods work is young men's work, but the average age of lumberjacks in at least one Upper Peninsula Michigan camp was over fifty years.

The isolated and individualized nature of much of the lumber industry made it difficult for manpower controls to be exercised. Many of the men felt that no war-time control could reach them for some special reason. Men who were militarily eligible but in deferred classifications were quite likely to be exemplary workers. If such a man became over-

age or otherwise unfit for military service, he very often abandoned consistent production in favor of absenteeism, job-hunting, non-essential occupation, and similar activities. The poor competitive position of the jobs available also contributed to the general lack of servicing of the industry by war agencies whose stated function was to supply manpower and keep it on the job. Ironically, the War Department for many months forbade the use of prisoners of war in logging and lumbering, erroneously holding that it was in violation of the Geneva Convention. After it was discovered that actually such use was advocated by the Convention, lumber operators found almost every conceivable impediment in the way of obtaining prisoners of war for their labor needs. Labor unions did not welcome the idea of using prisoner of war labor and this view was shared by some labor conciliators.

THE PROBLEM OF EQUIPMENT SHORTAGES

Shortages of certain items of heavy equipment together with the necessary tires, replacement parts, and operating materials had a direct bearing on the amounts of timber products produced during the emergency. Among the items needed by the industry which hindered production the most were crawler tractors, wheel type tractors, trucks, lift and lumber carriers, stationary power units, motor graders,

cranes and shovels and miscellaneous items of dirt moving equipment needed for the construction of logging roads. Tires, replacement parts, gasoline, and permanent type anti-freeze were among the subsidiary needs that became problems.

Shortage of these items of equipment were second only to shortage of labor in affecting the production of timber products. In fact, shortage of labor tended to augment the demand and need for equipment, since most operators, in the face of dwindling labor supplies, were forced to mechanize their operations to offset lack of manpower, thereby greatly increasing the demand for scarce items of heavy equipment.

Approximately eighty percent of the total volume of sawlogs is carried by trucks all or part way from the woods to the sawmills. In 1941 an estimated 86,000 truck units were in either full or part-time use in logging and lumber production, or an estimated full-time equivalent of 52,000 trucks and 25,000 trailers.

Annual replacement needs were estimated to be 11,886 trucks. Heavy duty trucks and other heavy duty equipment competed directly with military requirements. For example, lift trucks and lumber carriers, machines developed originally by and for the lumber industry, were in great demand by the Army and Navy for use at docks and on construction projects for use in handling construction materials. Similarly, they were needed around sawmills to handle lumber and, since

one machine could accomplish the work of about twenty men handling lumber by hand, the demand for them was tremendous and never could be fully met. The trend of increased demand for labor saving equipment to expand production is also exemplified in tractors. During the five year period immediately preceding the war, the average yearly demand for tractors in the lumber industry was 1,500 units. There was a steady increase during the war years until in 1945 the need, based upon closely screened applications, was for 4,000 units of all size classes.

Tire controls posed some difficult problems. For example, prior to the war the logging industry had been using a special type tire, particularly in the Pacific Northwest, where the loads were heavy due to the large size of the logs. To reduce the load and weight, enabling the use of smaller tires, slows production and adds to logging cost, yet as soon as the war started these special tires were practically eliminated from civilian consumption. The industry was forced to use inferior tires with shorter life in the face of a shortage of tires for replacement purposes. There were instances when the military agencies actually suffered from lack of lumber because the lumber industry lacked tires that the military had taken.

Local shortages in gasoline supplies occurred, but seldom interfered with direct productive processes. Some

lumber wholesalers, log buyers, graders, and other specialists in the industry were hindered in travel by automobile. Ethylene glycol base anti-freeze, being a diversion of explosive manufacture, naturally came into tight war-time supply. Lack of foresight and planning for anti-freeze needs for the timber industry unnecessarily delayed and curtailed production.

Certain miscellaneous equipment and supplies commonly utilized by logging, sawmill, and other wood working industries, because of their scarcity in civilian supply developed into inconveniences affecting production. The principal items were: manila rope, work gloves, work shoes and boots, wool underwear, work clothing, and sawbits. They, at no time, were a serious deterrent to total production, but were acute handicaps in some areas due to unbalanced distribution.

Inequities in food rationing were of a more serious nature. Logging requires extreme physical exertion and necessitates the highest food calorie intake of any of the heavy industries. Allotted the same rations as tea-rooms and drug stores, logging camps quickly ran out of meats, fats, sugar, coffee, and processed foods. Their isolated location prohibited effective supplementation with fresh vegetables and some other non-rationed foods. After considerable delay and hindered production, differential rationing by the Office of Price Administration at least partially corrected the situation.

THE PROBLEM OF ADVERSE AND UNSEASONABLE WEATHER

The very nature of the timber products industry makes it vulnerable to weather conditions. The normal operating procedure is cyclic in the industry in order to adjust production to seasonal fluctuation in the weather. For example, in parts of the Lake States, swamps and bogs prohibit much woods activity until they freeze over during the winter, thus delays in freezing, intermittent thaws, and early springs can cause serious production handicaps there. On the other hand, unusual cold spells can freeze log ponds at mills and stop or materially delay production. Normal snows may be useful in packing and smoothing roads as well as enabling sled logging, but deep or wind-drifted snows may stall log transportation. The usual rains are always taken into account, however, heavy or unseasonable rains can cause great production handicaps ranging from muddy, impassable roads and washed out culverts, and bridges to flooded bottomlands, mill settings, and lost log booms. Even high winds cause delays in blowing down numerous trees that block logging roads. Storms also cause difficult salvage jobs by causing jackstraw arrangements of interlocked stems in blow-down areas.

The importance of weather handicaps varies in different regions of the country, but everywhere weather must be considered as a production factor. Log production is the

most vulnerable to weather. Delays in log production commonly are not felt on the lumber market for some time as log inventories may delay the incidence of the deficiency. Although nothing can be done directly to forestall adverse and unseasonable weather, awareness of the nature of the problem enables circumvention tactics by increased production during seasonable weather.

THE PROBLEMS AND REMEDIES DEVELOPED IN PRODUCTION CONTROLS

Production controls in the timber products industry can be envisioned as nets thrown over 31,000 sawmills; some 25,000 retail, wholesale, and concentration yards; 20,000 manufacturers of a multitude of wood products; over 75,000 consumers of box and crating lumber; and countless thousands of other customers including utilities, railroads, construction contractors, and millions of farmers, homeowners, and other small consumers. The complexity becomes even more formidable when products other than lumber are added to the above figures. That some slipped through the nets, or were outside their reach is understandable.

Reviewed in the context of other war-time controls over distribution of individual materials, the history of lumber stands among the more successful examples of government management in the national emergency. A good part of the credit for this performance must go to the fact that lumber became

critical later in the war than most other basic materials. But the willingness of the top staff of the Lumber Division, as well as the planning and policy-making personnel of the War Production Board (WPB) and the procurement and distributive personnel of the military agencies, to lean on experiences of success and failure in related control problems for other materials was almost unique.

Problems and controls influencing timber products production and distribution, for convenience in discussion, may be divided into these categories: (1) WPB Controls of Production and Distribution, (2) Office of Price Administration (OPA) Price Controls, and (3) Need for Coordinated Controls.

WPB Controls of Production and Distribution. At an early stage in the war, controls of timber products distribution split into at least five directions, reflecting the complex and different conditions of production and distribution. These lines of growth were: (1) Control of Imported Woods, (2) Control of Aircraft Lumber, (3) Control of Plywood and Veneer, (4) Control of Hardwood Timber Products, (5) Control of Softwood Lumber.

The first line of growth, illustrated by the controls established over imported woods, involved woods which were of relatively minor importance quantitatively, but of considerable significance at certain key points in the war

program. The growth pattern for administrative management over foreign woods followed a simple three-phase history: (1) loss of, or maintenance of only a hazardous contact with, principal sources of supply; (2) drastic limitation of shipping space to bring in foreign stocks; (3) issuance of WPB control orders prohibiting virtually all non-military consumption. These orders are contained in the appendix.

The second line of early control development was that worked out for aircraft lumber (principally western soft-woods: Sitka spruce, Noble fir, and western hemlock). The special characteristics of producers and consumers of this type of lumber made the control of its distribution relatively simple. For the same reason, however, the possibilities of extending a parallel technique to other woods were limited.

The production of aircraft lumber required top grades of logs and skilled sawing. To secure this performance in production, the Lumber Division, through its Western Log and Lumber Administrator at Portland, Oregon, allocated the supply of logs of Sitka spruce, western hemlock, and Noble fir to sawmills and directed sawmills' shipments. Any sawmill desiring to cut lumber from these types of logs filed a monthly allocation request with the Western Administrator. On the basis of these applications, the Administrator allocated the output of specific producers to the sawmills. Distribution of aircraft lumber by sawmill operators was also

controlled by the Administrator through monthly shipment directives.

A third line of control development was characterized by the techniques worked out for plywood and veneer. The two types of plywood, softwood and hardwood, differ markedly. Softwood plywood is produced by a relatively small group of plants located in the West Coast States. Its wartime quantity uses were for military housing, pontoon bridges, ship interiors, packaging, and lifeboats. Hardwood plywood and hardwood veneers were manufactured in a number of plants, both large and small, some independent and others captive to such industries as furniture. Hardwood plywood and veneer found wartime uses in combat aircraft and training planes, landing craft and torpedo boats, furniture and shipping containers.

The early distribution history of softwood plywood was marked by assistance for the more important direct military uses through the preference rating machinery. Priorities were issued by the military agencies and the Industry Divisions of the War Production Board. As in so many other instances in which the priority power was freely granted to independent agencies and industry divisions, the Lumber Division of the War Production Board could not exercise any over-all integrated control. Widespread substitution of softwood plywood and other materials, often without regard

for its more appropriate uses, failure to screen requirements for its more important uses, and the absence of any procedure to provide a systematic review of orders on the books of producers resulted in the accumulation of serious backlog. By late spring of 1943, approximately ninety percent of manufacturers' shipments were being made on orders rated AAA and AA-1, while ninety-eight percent of new orders bore AA-1 preference ratings.

Early in the war the Lumber Division made several attempts to allocate logs to specific plywood manufacturers to institute an allocation system for all softwood plywood production. There was general opposition to such a program by the military services, for reasons parallel to those which supported the opposition of authority into the hands of a civilian agency. The increasing pressure on producers' backlogs, the steady deterioration in the significance of preference ratings as applied to softwood plywood, and the growing volume of upset production schedules resulting from the failure to secure delivery for the most important uses finally forced the acceptance of a total allocation system. The administrative aspects of this system were relatively simple, inasmuch as the allocation machinery covered only thirty-three manufacturing establishments serving less than one thousand different consumers.

As in the case of softwood plywood, hardwood veneer

started its wartime distribution history under the impact of preference ratings which were extended to the manufacturers of hardwood plywood by the producers of end products. The supply-demand balance, however, was considerably more favorable and it did not prove necessary to move into an allocation system. The pressure on producers was eased at least to the balancing point through efforts to limit the quantities of plywood going into non-essential uses.

The control problem for hardwood timber products, which illustrates the fourth line of control technique development, was more complex. A large number of species are included within this general category, each with special characteristics which adapts its use for certain purposes. The production of each individual species is relatively small, as is total hardwood production when compared with total production of softwood. The principal wartime uses of hardwoods were in construction, mine supports, ships, aircraft, vehicle bodies, tool handles, gun stocks, textile machinery parts, and shoe lasts. Over-all war distribution of hardwood lumber was substantially in the following pattern: factory use, thirty-four percent; box and crating, thirty-nine percent; civilian construction (chiefly railroads and defense housing), nineteen percent; and military construction and Lend-Lease, eight percent.

The early approach to the control of distribution of

hardwood timber products was through preference ratings. For a time, the Lumber Division attempted to discourage it, but was finally compelled to begin issuing preference ratings in order to regain some control over distribution. Preference ratings for hardwood lumber were being issued by the military agencies and by some of the WPB Industry Divisions. Sawmills found it necessary to establish a rating pattern for their shipments in order to qualify for assistance in procuring maintenance and repair materials. Only by issuing ratings, therefore, could the Lumber Division secure delivery on orders which it judged to be essential.

The net result of this development was a familiar one, the race of preference ratings for the highest category. Full control could not be exercised by the Lumber Division while the authority to issue ratings without quantitative restriction was retained by other divisions of the War Production Board and by the military agencies. Hardwoods, therefore, continued to be procured with preference ratings for uses which the Lumber Division often appraised as non-essential. Preference ratings assigned under the Controlled Materials Plan for fabricated products and non-controlled materials were often high enough to procure lumber in large quantities for relatively non-essential uses. One of the more serious situations of this type was created by the issuance of a Controlled Materials Plan preference rating for

a production schedule requiring only a small allotment of steel for nails or metal cleats, but a substantial quantity of lumber procurable with the high rating. This type of activity continually negated the pattern of essentiality established by the Lumber Division.

With production of hardwood lumber in from eight to ten thousand small mills, located throughout the United States east of the Rocky Mountains, the establishment of a distribution control starting at the mill was most difficult. The condition existing in the spring of 1943 was one of drift. The Lumber Division assumed no responsibility for the positive direction of the movement of hardwood. This inertia permitted, in fact required, the Central Procuring Agency² of the military services to exercise positive control. Enforcing no conscious direction over the distribution of hardwood lumber, and lacking information on the character

²The Central Procuring Agency was created on September 1, 1942, to centralize purchasing of lumber for the War and Navy Departments, Maritime Commission, Defense Plant Corporation, and Lend-Lease. The principal reason for its organization was to cut through the confusion created by the uncoordinated and competitive purchasing of construction lumber by the various service arms. As its operating experience developed, CPA's responsibility was extended to cover the procurement of lumber for any purpose in which any of the competing services was concerned. The Central Procurement Agency made no accounting to WPB for its purchases. Inevitably, the growing strength and responsibility of CPA sapped the control authority of the Lumber Division of WPB.

and location of consumption, the Lumber Division was in the position of observer rather than of responsible controlling agency. WPB control orders relating to hardwood are contained in the appendix,

The fifth development and chief control problem of the Lumber Division was softwood lumber, the production of which accounted for five-sixths of total output, and the uses of which mounted into the thousands. In 1942, almost seventy-five percent of the consumption of softwood lumber was in construction, another twenty percent was for box and crating, and the balance was consumed in the manufacture of wood products. In 1943, consumption for box and crating mounted sharply, the curtailment being absorbed largely by civilian construction. One other complicating factor was introduced by the widespread production of softwood lumber in almost 30,000 sawmills, many of which were very small and produced only a few inferior grades.

The softwood control problem made its appearance as both a general problem and a series of special problems. Aircraft lumber was predominantly softwood. Douglas-fir, the chief, all-purpose wood, was in demand for aircraft lumber, ship decking, marginal planking, pontoon lumber, softwood plywood, and other high-stress requirements. By early 1943, requirements for this species were so large that the substitution of structural steel for Douglas-fir was being

encouraged--a total reversal of the 1941-42 line of material substitution. Douglas-fir and the other western softwoods were also in demand for shell and ammunition containers. The lower grades of western softwoods and the eastern softwoods, principally yellow pine, were in demand for construction purposes, for containers, and for general manufacturing uses. In dealing with these diverse control problems, the Lumber Division attempted to distinguish between the special and general uses of softwoods.

The first control over Douglas-fir reworked the now-familiar pattern. WPB Order L-218 provided unlimited procurement authority for the Central Procurement Agency of the armed services and its designated contractors. All other distribution was subject to special authorization by the War Production Board. This was one more example of abdication by the Lumber Division and the transfer of the reality of control to the Central Procuring Agency, the actions of which were uncontrolled and largely unreported. The control orders relating to softwood are contained in the appendix.

Increased buying pressure on softwoods, induced particularly by the control over Douglas-fir distribution, led to the issuance of the western lumber order L-290. Under this order, the larger producers of the controlled species (production in excess of 10,000 board feet daily) were prohibited from shipping to any purchaser except to or for the

account of the Central Procuring Agency, one of its designated contractors, to or for the account of other government agencies, or on special WPB-releases.

The order accomplished for western softwoods what L-218 had done for Douglas-fir. The military services were given unrestricted procurement authority; civilian users were compelled to apply to the Lumber Division for individual authorization of purchase orders. The net gain was in two parts: first, the elimination of non-essential civilian uses through screening of individual applications; and second, the prevention of the indiscriminate issuance of rating authority by the industry divisions of the War Production Board. The philosophy underlying the action assumed that the elimination of clearly non-essential civilian uses would provide enough western lumber for all other wartime needs. The order did nothing to bring the reins of control within the grasp of the Lumber Division.

Because of the relatively wide range of substitutability between species in lumber, the successive imposition of controls over species preferred for military purposes threw heavy residual pressures on the remaining species, and principally on yellow pine, by far the most important quantitatively. Here finally was felt the mounting pressure of requirements, for containers, general manufacturing uses, and civilian construction.

The first move toward easing the pressure was the issuance in January, 1943, of M-208, establishing a special rating system for non-preferred uses of lumber. Preference ratings were assigned to itemized uses of lumber, with a ceiling at AA-2X. Inevitably, the scheme did not work. Military and Lend-Lease ratings, and ratings issued under the Controlled Materials Plan for fabricated products and non-controlled materials, almost uniformly outranked M-208 ratings. And beyond this difficulty was the underlying objection to the course of action pursued by the Lumber Division in most of its other control actions--unlimited authority to assign ratings was retained by the military agencies and by WPB's Industry Divisions. Within the self-imposed limits of this situation, the Lumber Division could act only in terms of expediency. It was ignorant of the consumption of softwood lumber for each class of use and was compelled to rely on estimates prepared by the Forest Service, which at best were crude approximations in terms so broad as to be useless for purposes of over-all allocation.

This was one of the most serious handicaps to the growth of an integrated lumber distribution control system. Beginning with the early summer of 1942, the Lumber Division repeatedly requested the claimant agencies to submit requirements for lumber, showing the types, species, grades, and sizes needed. No satisfactory requirements data were

submitted by any claimant during the balance of the year. It was not until well into 1943 that the division was able to assemble relatively complete and comparable statements from the principal claimant agencies. Even at this point, there was no way to test the validity of the stated needs.

There were a number of obstacles to the compilation of a complete statement of requirements. Outstanding among them was the argument among and within the claimants' organizations with respect to the size of their real lumber needs. This argument was a reflection of the early neglect of lumber as a significant war material, rapid changes in the magnitude of requirements, and the failure to build trained staffs capable of making the translations necessary to compile reasonably accurate requirements estimates. A second obstacle was the absence of clearly defined areas of responsibility for the presentation of requirements. Probably the most obvious and difficult problem was presented by containers. The Containers Division of the War Production Board was asked to act as claimant for part of the supply of lumber, but no agency was in a position to estimate its requirements of containers. Nor could an intelligent judgment be made by the Lumber Division with respect to the appropriate division of responsibility for presentation of requirements by the military agencies. Finally, there was no direct connection established between the presentation of requirements esti-

mates and the actual procurement of lumber. The agencies which were called upon to submit requirements did not themselves directly control the procurement of the total quantities for which they were standing as sponsors. This relationship tended to make it difficult to estimate requirements, to define areas of responsibility, and to compel the claimants to present such estimates promptly.

In the absence of the presentation of direct requirements estimates by the claimant agencies, an effort to forecast lumber consumption was made by the Forest Service of the Department of Agriculture in cooperation with WPB's Statistics Division. These estimates divided anticipated consumption between hardwoods and softwoods and for each of these classifications among direct military use, indirect military use, and civilian use. The estimates were based on lumber content factors tested by the Forest Service over a period of years.

The adoption of the Controlled Materials Plan as the principal metal allocation system inevitably led to its consideration for lumber. The Controlled Materials Plan, however, required that material be identified with its immediate and ultimate use and associated with the end use of the final product in which it was incorporated. This was workable within the Controlled Materials Plan framework because the controlled materials were almost universally purchased for

particular production purposes and ordered in terms of weight, size, and composition specifications. Lumber, on the other hand, was used in large quantities for boxing, crating, dunnage, shoring, maintenance and repairs, and a multitude of other uses for which exclusive and individual purchase specifications were not essential. Consequently, it was concluded that any effort to saddle the industrial system with an unrealistic and unworkable end-use system within the framework of flexibility in application which characterized lumber utilization would be likely to fail.

A different and potentially more serious problem was presented when consideration turned to the character of lumber producers and consumers as contrasted with the producers and consumers of the three major controlled materials. It was recognized that it would be difficult to establish full control over the output of the 31,000 sawmills, most of which were extremely small and located in remote places. These small mills could not be expected to provide detailed reports on shipments and unfilled orders parallel to those supplied by the steel, copper, and aluminum mills. It was agreed at an early stage that control of lumber at the mill shipment level could be extended only to those species produced by a relatively small number of mills, each one of which was large enough to maintain records of shipments and to receive and summarize allotments appearing on consumer

purchase orders.

This type of control was imposed in 1943 on the producers of western softwood and softwood plywood. A large part of the over-all lumber problem, however, centered in woods which could not readily be controlled in this way, especially the southern and eastern pines, the species of lumber produced in the greatest quantities and by the largest number of mills.

By late 1943, the type of control represented by the orders governing the principal hardwood and softwood species had become inadequate; it failed to provide the management tools required to deal intelligently and efficiently with current problems. Outstanding preference ratings were in excess of supply, and control through the priority system was breaking down. This situation paralleled in a dramatic way the conditions governing the distribution of metals in 1941 and early 1942. The most important consumers of lumber were free, under the existing orders, to procure and consume without direct quantitative control over their actions. Other essential uses were handled on a day-to-day basis without reference to the total supply-demand balance as the basis for approval or disapproval of individual requests. There was no opportunity to appraise one application against another in terms of available supply and the needs of alternative users.

The administrative problem of controlling the production and distribution of lumber, following the inexorable pressures of wartime demand, had progressed from disorder through confusion to chaos. In terms of even minimum estimates, military and essential civilian requirements were in excess of probable supply. But complete, detailed, and reasonably valid requirements statements had not been submitted to the Lumber Division. The Division had no practical working control over procurement. The military services were permitted to buy as much lumber as they wanted, without restriction as to species or grade. The WPB industry divisions were generally free to assign preference ratings good for quantitatively uncontrolled lumber procurement. Important non-military and military-supporting uses, such as containers, agriculture, railroads, and housing, were at a disadvantage relative to the dominant procurement position of the military agencies. This situation was made progressively worse by the Lumber Division's policy of rescuing endangered military requirements by the issuance of orders which denied all lumber to non-military uses except through specific application and release. Under this policy, there was no assurance that essential civilian uses would receive even their minimum requirements. For the military agencies, the Central Procurement Agency performed a large and expanding function with ultimate responsibility for the procurement

of lumber for any use in which its sponsors were interested. A necessary concomitant of the power of the Central Procurement Agency was the administrative weakness of the Lumber Division. It was a source of power for the Central Procurement Agency, but its grants of management authority were issued as blank checks which were always covered by restriction of other procurement. Since a large part of the demand for lumber not provided for by Central Procurement Agency procurement was of indirect military significance--as in containers, reels, matches, and wood products--the unrestrained purchasing activity of the military often was the source of their own troubles. Beyond all else, the heart of the problem lay in a conflict of management philosophies. The personnel of the WPB Lumber Division had generally accepted its function to be the expediting of military requirements rather than the administration of the distribution of total lumber supply to all claimants.

To deal with this situation, a wholly new approach was made to the problem of administrative control. An allocation mechanism was designed to assist the War Production Board to program the distribution of lumber supply in an orderly manner by directing available lumber to the most essential of the conflicting demand. The control system provided for a quarterly summation of the requirements of all important consumers, and a balance of total requirements

against total anticipated supply for the same period. Once a decision was reached on the quantity of lumber to be allocated to each competing demand, individual consumers within each demand area were authorized to receive lumber in accordance with the over-all program determination. Inasmuch as potential lumber users ranged from the individual householder purchasing a few board feet to repair his fence to the industrial concern using a million board feet each month to crate manufactured equipment, a number of different procedures were established, each adapted to the segment of consumption and the individual consumer to which it related.

The lumber control established by WPB Order L-335 in the spring of 1944 governed all lumber except certain species and grades subject to established administrative procedures.³ Under the terms of the control plan, industrial users of more than 50,000 board feet per calendar quarter made application to the War Production Board for authorization to purchase. The application form called for a reporting of past and anticipated quarterly shipments of all products (made of wood or not) made in each "inventory accounting unit" of each manufacturing plant. Shipments of fabricated wood products were further analyzed by preference ratings so that the importance of the products themselves could be appraised and

³ Principally aircraft grades of Sitka spruce and Noble fir, shingles, lath, railway and mine ties, hardwood flooring, and log segments produced for conversion into veneer.

the volume of their output controlled through lumber authorizations. Purchase requirements were submitted in species and thickness detail for softwoods, and species and grade detail for hardwoods. Applicants also reported consumption by species for the preceding calendar quarter and end-of quarter inventories. This group of industrial users accounted for the bulk of the total lumber needed for wood-products manufacture, shipping containers (produced in both commercial and captive plants), and dunnage. Each military and export agency filed a master application for its total calendar requirements of lumber to be purchased for its own account.

Small industrial consumers (using less than 50,000 board feet quarterly) were authorized to receive lumber without filing individual applications. These small industrial consumers were authorized to place "certified" orders for quantities necessary to carry out production schedules authorized under the Controlled Materials Plan or any other regulations of the War Production Board.

Certain large industrial users (such as mines and smelters, petroleum companies, and construction jobs authorized by WPB or other federal agency) were authorized to procure lumber on the authority of the basic orders or certifications governing their operations. Farmers were authorized to buy lumber by authorizations issued through local offices

of the War Food Administration. The WPB made available a quantity of lumber for farmers which the War Food Administration divided among its local offices. The County War Board offices authorized individual farmers to purchase lumber under quotas established for each office.

All buyers in the foregoing classes defined their purchase orders as "certified orders," thereby informing their suppliers that the consumers were authorized to receive the lumber ordered. Such certified orders received by retail and wholesale lumber distributors were extendable to the sawmills. In this way, each lumber dealer was permitted to purchase and make available to his customers or replace in his stock that quantity of lumber which the customers were authorized to buy. At the same time buyer-seller arrangements were largely maintained, together with the advantage of a continuance of the competitive relationships of the lumber market. The control was made complete by a prohibition of sawmill deliveries except on certified orders.

No preference ratings were issued under the lumber control plan established under WPB Order L-335. When consumers had ratings to get production materials for a product, maintenance materials, or operating supplies, they used the same rating to obtain lumber. If the consumer did not have a rating he got one in the same way as a rating for any other material (except farmers who got a rating through the

War Food Administration).

The control provided both the information and the administrative machinery required to balance supply and demand each calendar quarter, to cut back less essential requirements to the extent necessary to satisfy more essential needs, to justify the cutbacks by reference to the more important claims against available supply, to distribute procurement authorizations to individual consumers within the over-all pattern established by Requirements Committee determination, and to assure the orderly distribution of lumber from sawmill to ultimate consumer so as to secure the most effective utilization of all types of lumber for the total war program. In the application of the control, the total quantity of lumber for which certified orders could be placed was limited to ^ttotal supply. Each lumber user had reasonable assurance that the quantity of lumber he was authorized to receive during the succeeding calendar quarter actually would be delivered. Integration of the machinery with other

WPB controls provided for the distribution of lumber to authorized programs in such manner as to support levels of production for which other critical materials had been allocated.

Probably the most important change introduced by L-335 was its organization of a new philosophy of distribution control. From the beginning of the war production

drive until the spring of 1944, military procurement of lumber had been free from all restrictions. The policy of the WPB Lumber Division, expressed in all of its limitation and conservation orders, had been to facilitate every direct military need, without review of its urgency or of the impact of unlimited military purchasing on other lumber requirements, many of which had an important relation to the fulfillment of military programs. The net effect of this policy had been to lodge in the hands of the Central Procurement Agency acting for the military services whatever measure of control existed over lumber and to leave a minimum of residual authority in the Lumber Division of the War Production Board. Order L-335 accomplished a complete reversal of this position. Allocations of specified quantities of lumber were made to the military agencies. Indirect military requirements were given adequate protection within the limits of anticipated supply, as were export and essential domestic civilian needs. Artificial deficits, created by the common practice of multiple placement of purchase orders, were removed. And above all, the focal point for control, together with responsibility for its administration, was reassigned to the War Production Board, the only effective source of management for an integrated control system.

OPA Price Controls. In so far as timber product prices were controlled against the market forces of supply and demand and in so far as these controls were unbalanced with other commodities as well as between various timber products, there were price problems that influenced production.

Long before the declaration of war, leaders in business and government were fully aware that stringent action would have to be taken to prevent a run-away inflation. The public wanted the Government to hold down the cost of living, but there was little realization that inflation controls would require the sacrifice of immediate financial gains for the more lasting benefits of a stable economy.

There were advanced two general approaches to the problem of economic stabilization. The first (Baruch Plan) requested a general ceiling on every item of commerce or service. The chief advantage of this method was the comprehensive nature of the control--every segment of the economy, agriculture, labor, and business would be treated as parts of a single, living, sensitive organism. An essential condition of the Baruch Plan was that the general ceilings be established on "some date on which the normal operation of the law of supply and demand can be said to have controlled prices." Thus, adjustments would be necessary

only to adjust prices which for one reason or another were not at satisfactory levels on the base date.

The alternative to a general ceiling was "piecemeal price fixing." Under this plan ceilings would be placed on the prices of commodities as and when they exhibited inflationary behavior. It was thought that this selective approach would permit the prices of individual commodities to rise when increased supplies were needed for defense production. Moreover, the Government would be able to deal with dangerous price rises as they occurred without regulating the entire economy. However, in practice, commodity price controls could not prevent increases in the cost of living, as long as consumer purchasing power exceeded the available supply of goods. It therefore became necessary to supplement price control with other anti-inflation devices--wage stabilization, increased taxes, appeals for increased savings, and reduction in installment credit. By the end of January, 1942, the Emergency Price Control Bill became law.

The chronological list of price regulations governing timber products, in general, reflects the emergence of the various commodities as problems. During prestatutory OPA fifty percent of wholesale prices were brought under control with 105 Price Schedules (PS), 120 voluntary price agreements, warning letters and suggestions--the so-called

"Jawbone Control." Later, these were reissued under the law and also Maximum Price Regulations (MPR) were established. The Maximum Price Regulations that were issued for primary forest products are listed in the appendix.

Need For Coordinated Controls. Measures necessary for the control of timber products must necessarily be geared to any general system of managing the economy. No industry or segment thereof can be treated individually with any extensive degree of success. The present economic structure is so interwoven that to disturb one part of the whole soon produces repercussions felt more-or-less throughout the whole structure. All economic controls must be coordinated to result in a smooth functioning economic machine.

The previous section dealing with price controls hinted at the ramified nature of the problem. It is quite obvious that any industry such as the timber industry cannot effectively be placed under price controls while the rest of the economy is left to function freely. Less understood are the guide lines to preserve the inter-price ratios between industries when all are brought under control, as well as the maintenance of intra-price relationships within industries. When price control policies deviate from the established pattern of prices, economic stresses and strains are set up. For example, an out-of-line price on structural steel might

shift demand in the construction industry toward concrete which in turn might increase the demand for lumber to build forms. Also, within the timber industry for example, a disproportionately high ceiling on pulp logs and bolts might unduly attract to the paper manufacturers the critically needed raw materials of the lumber, pole, mine timber, and other such timber products industries. The sensitivity of prices and the market activity they may cause is quite varied between products. Regulations placed on prices to control inflation or direct production must be wisely done to avoid inequity and distorted results.

The prior section that treated War Production Board controls was purposely narrowly limited to the timber products industry. Even when the discussion was confined to that industry the problem was not simple. When the complexity of production controls in the timber products industry is further confounded with the problems of inter-industry relationships, the difficulty in its true light can be appreciated. An example of the inter-industry type of production problem was that of manpower. How skilled timber workers were lured to higher paying industries, and how the industry suffered, at least for a time, at the hands of indiscriminate draft boards have been already recounted. Similarly, the allocation of equipment, supplies, food, and clothing must be equitably distributed to all industries including the timber

products industry. In addition, a just distribution of the essentials of production must be balanced within an industry not only among its various segments, but also between large and small operators in order to assure maximized productive efficiency.

The tremendous job of managing the economy can be divided into two major categories. The first category is the problem of providing suitable and workable controls of all significant commodities and services, and the other problematical category is to coordinate these controls into a smooth functioning and efficiently productive economy. It is certainly a job to challenge the finest brains of the country.

CHAPTER III

PROBLEMS OF THE PURCHASER OR CONSUMER

(PROCUREMENT PROBLEMS)

Production of adequate and satisfactory products for war is an enormous problem. Part of that problem is for manufacturers to know how much and what kind of commodities to make. Then, too, few goods are used where they are made, so a further task is to see that they are transported to consumption points at the proper time in quantities and qualities desired. Finally, the matter of payment in proper amount, after the order is satisfactorily filled, completes the transaction. Procurement may cover this whole field from advising the manufacturer what to produce to the final checking and payment of the delivered articles. In this section of the report only the procurement problems in obtaining timber products for the Army, Navy, Defense Plant Corporation, War Shipping Administration, Lend-Lease, and the Maritime Commission are considered.

During the war period some six billion dollars were spent to procure timber products for the above six agencies. When the size of that purchasing job, together with specification complexities, and price and transportation difficulties are considered in providing such commodities as construction lumber, aircraft veneer, and white oak for ships;

the monumental stature of the task can be appreciated. The problems encountered in procurement can usually be relegated to one or more of the following categories: (1) Organizational and administrative problems, (2) Specification problems, or (3) Distribution problems.

It is futile to try to evaluate one category over the others as the more important of the procurement problems. Commonly they existed together, and to try and establish individual importance would be but academic. Perhaps the most obvious problem and the one that first caused an unmistakable bottleneck was the organizational difficulty encountered in ~~trying~~^{ing} to procure as usual in the rocketing expansion for defense. Procurement in this situation might be termed the pre-Central Procurement Agency Period which existed until September 1, 1942. How the six agencies obtained their timber requirements before the establishment of the CPA follows:

The Army, prior to 1942, delegated its timber product procurement activity to nearly all of the technical branches. However, by far the bulk of these products was obtained through the Procuring and Expediting Section of the Office of the Quartermaster General. The Construction Division of the Quartermaster Corps was charged with troop housing and facilities at camps, posts, and stations both in the zone of interior and at foreign installations, as well as other Army

facilities construction.

Similarly, nearly all bureaus of the Navy procured timber products for their own requirements, but under a general tendency to centralize such procurement in the Bureau of Supplies and Accounts. An important exception to this tendency was new shore installation construction which was handled by the Bureau of Yards and Docks or its contractors. Obtaining timber products for ship building was a function of contractors engaged in ship construction, the Bureau of Ships, and the Bureau of Supplies and Accounts.

The War Shipping Administration, Maritime Commission, and the Defense Plant Corporation were not directly involved with procurement of timber products. It was the responsibility of their contractors to procure their requirements. Purchases for lend-lease accounts were handled by procurement officials of the Treasury Department.

The usual government procedure in procuring supplies is to offer invitations to bid, setting forth commodity descriptions, specifications, quantities required, and other pertinent information. Bids are received, evaluated, and accepted or rejected. This method supposedly assures free competition, resulting in the greatest value for money expended by the Government. Actually, it is sometimes a cumbersome and somewhat costly arrangement.

When the floods of defense buying and construction

were loosed in 1941, the usual procurement methods bogged down. A vivid example of why this happened is shown in the following sketch of one of the first large Army lumber procurement jobs. Two million feet of lumber was required for four new Army camps. Invitations to bid on the project were sent out in accordance with the usual procedure. Three hundred thousand sheets of paper were used in the compilation of these bids; more than 250,000 prices were submitted. From a pool of accountants awaiting Government assignment, the Army borrowed thirty accountants who worked night and day for ten days in an effort to organize the multitudinous bids into a shape where awards could be made. Twenty typists were kept busy writing telegrams alone. The abstract sheet on this job was five feet wide and 120 feet long and it took so many weeks to reach the award stage that when the successful bidders were notified, the stock upon which they had made their bids had reached various stages of depletion.

To cut through the red tape and expedite lumber procurement the Quartermaster Corps of the Army developed an auction system of buying timber products. Vendors were notified of the time, place, and quantities of timber products to be bought. At the auction, and with the requirements itemized, the suppliers could bid on as much as they felt they could supply. Awards were made to the lowest bidder. If a representative of the using agency of the contractor

was present, the contracts were drawn on the spot. In any case, the supplier could notify his sawmill and production could be started immediately and the recipient, if not present, could confirm the bid by telephone or wire and contract could be drawn up later.

The Navy had a procurement plan that lay somewhere between the usual bid procedure and the Army auction plan. They organized prospective suppliers into groups and rotated the opportunities to bid among the groups.

In addition to the problem of the tremendous amount of paper work under the procurement-as-usual setup, there were other complicating and confusing factors. The unrestricted competition between the various government agencies, war contractors and civilian interests had detrimental effects on timber products procurement. Prices began to rise rapidly as demand exceeded supply. This commonly channeled the lumber and other timber products to the buyer who could pay the most for it, regardless of the essentiality of the ultimate use. This situation brought a plague upon suppliers in the form of hordes of experienced and inexperienced buyers plus a general abundance of zealous expeditors. Producers complained of the large amounts of their time required to deal with the numerous public and private buyers and expeditors. It is hard to evaluate the production loss occasioned by the surplus of these procurers, but the tendency is to

underestimate it.

Uncontrolled, competitive purchasing also caused actual misuse and waste of the production facilities of the industry. Mills often not equipped to produce special products would accept such orders with patriotic motives, while better equipped mills were producing less essential items.

Maldistribution of available supplies of timber products was another and important consequence of decentralized procurement. There were instances where local and relatively small quantities of materials were vitally needed but which could not be filled because the total local supply was drained away in large shipments for camps, ships, or factory construction. Sometimes large contractors, needing a relatively few items or goods, would purchase the entire output of a mill and resell what they did not want to largely non-essential users. Even between essential users it was to be expected that some contractors and agencies were better organized, more efficient, and perhaps more aggressive than others. This contributed so seriously to maldistribution that the issue had to be solved.

In December, 1941, the Army construction program was transferred to the Corps of Engineers. The auction plan of procurement of timber products was continued to such good effect that soon the Army was getting nearly all of its requirements and other agencies and contractors were

experiencing difficulty. In order to solve this situation, a Central Procuring Agency was established in the Corps of Engineers on September 1, 1942. The principal reason for its organization was to alleviate maldistribution of construction lumber and to cut through the confusion created by the uncoordinated and competitive purchasing by the various agencies and defense contractors. It centralized the procurement of timber products for the War and Navy Departments, Maritime Commission, War Shipping Administration, Defense Plant Corporation and Lend-Lease, including the contractors to these government agencies.

Procurement through CPA was quite simple in process. Requests for materials were submitted to CPA by the using Service for both their own and their contractors' needs as they arose. CPA would place the items up for bid at their next auction or if the need was great enough a special auction might be called. Procurement was also made by direct negotiation with the vendor or by means of sealed bids, but the auction system was most widely used and satisfied most of the requirements.

Procuring for the several agencies places CPA in a semi-judicial role in allocating the scarce lumber to the various users. For guidance in allocating critical items when inter-agency demands conflicted, CPA was buttressed by a Lumber Advisory Board, consisting of a representative of

each using agency. If the conflict could not be resolved there, appeal was provided to the Lumber Committee of the Army and Navy Munitions Board. It speaks well of the cooperation between the lumber-using agencies that reference to higher authority was never necessary by the Advisory Board.

Some of the procurement problems were not solved even by the improvements inaugurated under the CPA system. The problem of specifications was notably in this category. Specification problems can be generalized into three categories: Specifications were either (1) too high, (2) too low, or (3) were uncommon or otherwise problematical.

Specifications considered too high may be completely justified and if so the problem was then one of inadequate forest resources or other production problems. Where the specifications are considered too high and less exacting qualities would suffice, it was a procurement problem. An example of the latter sort occurred in the change-over from pre-war to the expansion for defense. During the relative trickle of pre-war purchases, some high specification items were procured with no trouble or question. However, when the war expansion required large volumes of these stringently specified items bottlenecks arose due to blind insistence on the established specifications. A reappraisal of them might have lowered the threshold, enabling the fulfillment of requirements on at least some of the critical items. In

a buyer's market a vendor will tolerate elaborately exact specifications, but in a shift to a seller's market, as occurred early in the war period, suppliers were quick to side-step items difficult to supply, and inordinately high specifications provided a real, but artificial shortage. The obvious solution is a constant, technical, and critical attitude on all specifications, a weighing appraisal of specification changes to avoid confusion and production alterations, and careful designing, where applicable, to put requirements within easily supplied specifications.

Specifications that were too low were infrequent and not of much consequence. The damage in this case arises in excessive replacement of the too lowly specified items. For example, difficulty was experienced during the war in procuring 5/4 ($1\frac{1}{2}$ -inch thick) lumber that was sufficiently dry to meet the specifications for tent pins. When the specifications were lowered to include 4/4 stock, the requirements were met but the pins split so easily that it necessitated the purchase of greater quantities.

Unfamiliarity with the timber products industry and the properties and characteristics of the various wood species was perhaps the most important factor leading to uncommonness and other difficulties in writing specifications. Examples of this sort arose in some of the early cantonment designs. Some were based on a 10-foot module, requiring

dimension lumber in that length. This is an uncommon lumber length, since most logs are cut eight or sixteen feet long. To produce large numbers of 10-foot pieces requires cutting the lumber, resulting in waste of materials and time. In another instance in Army post theatre designs, unusually long dimension lumber was specified for the back of the stage. These and other mischance specifications caused considerable delays and unfilled orders which could have been eliminated by proper design and specification supervision.

Analysis of the CPA Inquiry Files (requests for lumber by the using agency) showed that three-fourths of the specification problems originated on the buying side; whereas, the other fourth of the problems clustered around the producer. Two-thirds of all the specification problems were caused by changes in the specifications or plans; a fourth by the vendor being unable to meet the specifications; and about ten percent of the problems was caused by materials ordered not being suited for the job. The incidence of specification problems, as would be expected, was heavier at the start of the defense mobilization. They increased in numbers until the fourth quarter of 1943, when they started declining. A sharp drop in specification problems by the middle of 1944 was interpreted as the result of corrective action on specifications to bring them into line with the industry's ability to fill, as well as the lowered lumber

consumption from the 1942-43 peak.

Efficient transportation is a necessary accomplice in procurement-producer teamwork. The War Production Board estimated 1.5 million carloads of lumber were shipped in 1942. Transportation was a tremendous job all through the war. Some abuses were perhaps unavoidable; many of the difficulties and inefficiencies might have been eliminated.

Cross-hauls of lumber between producing areas was a waste of valuable transportation equipment and time. Uncoordinated purchasing was a factor in this situation. For example, in 1942, 18,758 carloads of softwood lumber were shipped into the Southern Pine Producing Area from the Pacific Northwest, while 636 cars, during the same year, hauled southern pine lumber into the Pacific Northwest. Part of such seeming transportation waste was justified by military necessities, but the part that can be minimized by planning and coordination should be accomplished.

The common military transportation problem of assembling materials in central depots only to be later reshipped to the areas from which they came also figured in wasted lumber movements. Also, the usual rail shipping problems of getting orders in even car amounts, obtaining prompt unloadings, furnishing government bills of lading, and having the necessary car requirements (especially gondola cars) posed many miscellaneous procurement hindrances attributable to transporta-

tion. It can be assumed that the responsible authorities in most of these and similar cases aim to keep these impediments at a minimum.

Manpower problems, forest resource depletion, and other factors had closed down some 9,500 sawmills by 1944. This put an added burden on transportation in shipping lumber to these areas formerly supplied by local mills. This relatively small increased transportation problem serves to focus attention on the basic need for well-distributed and adequate forest resources.

Besides transportation as a procurement difficulty, there were two other factors that affected distribution; namely, prices and delayed payments.

Unintentional influences brought about by OPA regulations caused some procurement impediments. One example of this type of difficulty was news-leaks of forthcoming price ceiling increases, which caused operators to hold up shipments in order to gain the additional remuneration. Later, this sort of problem was minimized when shipments under existing contracts were assured of any subsequent price raises. The price procurement problem prior to OPA centered around bidding up critically needed timber products to perhaps exceptional cost to the government. After OPA regulations were established, prices were not allowed free movement to bring forth needed production of critical items while

curtailing manufacture of plentiful commodities. This caused some price procurement problems. OPA responded with some price adjustments, but in so far as they were delayed, inadequate, or not allowed, procurement was handicapped.

Delayed payments for timber products delivered to the government caused various degrees of procurement difficulties. There were examples of five to six months' delay in payment of some orders. Most producers are financially unable to carry such commitments and it is perhaps illogical and improper to expect them willingly to do so. Some difficulties arose due to the inability to bring destination receipts into agreement with shipment bills. Car tallies not being included in some shipments, caused some later discrepancies. The size of the emergency shipments; the usual, hectic construction scenes at receiving points; and the somewhat intricate government procurement channels, fiscal procedures, and accounting methods all added up to reason for payment delays, but nevertheless, that appeared as insufficient justification to some operators who hesitated in selling to the government for this reason.

CHAPTER IV

WEIGHING THE SITUATION FOR THE FUTURE

Some problems of timber products production and procurement will undoubtedly be different in another emergency. Instead of shuttle blocks and shunt poles being in short supply, for example, ski blanks and snowshoe frames may be the critical items. But, whatever the pattern of war demands, wood will be called upon to fill a host of uses. What could take the place of lumber and plywood for construction and crating, poles and piling for their uses, and railroad ties in the nation's transportation system? The timber demands for these and other uses might rise to staggering proportions should American cities come under military action.

Foremost in an appraisal of the timber products situation to meet another emergency must come the question of forest resources. The true importance of this factor of production was obscured in the last war by other more immediate and more easily correctable factors, such as manpower, equipment, production controls, and procurement procedures. To gauge the full importance of the forest resource factor, imagine perfect and easily reached forests by every sawmill; abundant, quality logs for all the veneer lathes; and the necessary species, volumes, and qualities needed to fill

the other timber products requirements. In this situation timber products production or procurement problems would be insignificant. It is the forest resource problem that is the heart and the key to the difficulty.

The forest resource shortage largely explains the current and significant high price of lumber which is fifty percent in excess of the price index for other building commodities; the migration of the lumber industry across the continent and the present decline in numbers of large sawmills; the lengthening hauls from woods to mills; the beginning exodus of the plywood veneer mills from the long-time center around Puget Sound to northern California; the increased pressure in demands for national forest stumpage; these and other weather vanes indicate without question the depletion of our timber resources.

The dwindling volume of standing sawtimber is but one facet of the problem. The volume remaining is not well distributed. In the West, the last stronghold of virgin timber, sixty-five percent of the standing volume of sawtimber is growing on but twenty-three percent of the national sawtimber area. The North and South are characterized by forests that have been cut-over and depleted. In the South an increasing number of mills are cutting six-inch trees and it is not uncommon to see a logging truck carrying fifty or more logs. Obviously, mills operate on such small logs only because the

supply of larger timber is scarce. The maldistribution of the remaining sawtimber also adds to the nation's transportation problem.

In addition to the standing sawtimber being depleted and that what remains being centered largely in the northwest, the age classes in the nation's forest growing stock are unbalanced and otherwise deficient to assure a sustained production of timber. In the North, for an example of poorly balanced age classes, almost half the commercial forest land bears only seedlings or is denuded. There are great areas of land that could be in process of growing timber, but by negligence and lack of foresight are not fully productive, either by being inadequately stocked or completely denuded. For the country as a whole there is prevalent understocking. About thirty-six percent of all the commercial forest land is deforested or has less than forty percent of the number of trees required for full stocking. Concomitant problems of growing adequate timber supplies is the enormous non-commodity drain from our forests in the form of fire, insect, disease, and wind, ice and other damage. Over the entire forest problem and adding to its complexity is the intricate ownership pattern between federal, sub-ordinate government, and private owners.

The concept of comparing the national timber growth with timber drain to weigh the sustained yield possibilities

has many limitations that can only be suggested here. Some persons in the industry point to the near balance of all-timber growth and drain at around thirteen billion cubic feet per year. This apparent balance masks a number of serious deceptions among which are: (1) the unbalanced age classes which causes too much of the growth to occur on very young trees; (2) the heavy cutting of desirable species, which makes much of the growth figure upon undesirable species; and (3) the distinction that four-fifths of the drain comes from sawtimber while growth of trees in that category fall short of meeting the drain by fifty percent. From the economic standpoint a future balance might be achieved in several different ways.

Augmented imports of raw timber materials and products is one way to bring about a balance, but such optimism is limited as there is less opportunity to increase our imports than might be supposed. Although traditionally considered as timber exporter to the world, since 1940 this country has been on a net import basis for lumber. However, the net imports of lumber represent less than two percent of total lumber production. Similarly, the imports and exports of railroad ties, plywood and veneer, and poles and piles are a very small percentage of total production of these commodities. The North Temperate Zone softwood or conifer forests are by far the most important source of the world's

timber supply. Significantly, Russia possesses one-third of this supply. There is no indication that the fabulous tropical forests can take the place of the North Temperate Zone softwoods. All in all, there is a world shortage as well as a domestic shortage of timber.

An undesirable method of balancing our timber budget would be to allow increasing shortages of timber to develop and the balance come about in the forest products market through substantially increased wood prices and consequent curtailment in consumption. From a military standpoint alone, such a course is untenable.

There is no easy way and no substitute for a far-reaching program to bring the nation's forests under good management to insure timber products for the future. It is a possibility that the present clouded international situation will not precipitate into World War III, but will remain a continuous emergency, a conflict of attrition. In any case, the close correlation between the adequacy of the forests of the country and its economic well-being has long been recognized. One of our foremost economists,¹ in analyzing the future national income of the United States, predicted that in expansion of output the economy would consume more raw materials in the next thirty years than have been con-

¹Sumner H. Slichter, "How Big in 1980", The Atlantic, November, 1949.

sumed in the last century and a half. Wood is one of these raw materials.

On the forest resource problem the nation faces something of a dilemma. The cry is to increase output. Yet even the present rate of sawtimber cutting exceeds the annual growth. The job is a long time one and tremendous, but not hopeless. The problem should be attacked quickly, it worsens with drifting and delay. The former abundance of our forest resources has unfortunately tended to camouflage their vital importance. It seems prudent military planning that the decline of our forest resource be checked and revised. Detailed treatment of the problem with recommendations is contained in another report.²

A principal, immediate concern in an emergency is the status of timber products inventories throughout the country. The booming construction period following the war delayed filling the war-spent lumber stocks. However, by the end of 1949 the war-low lumber inventory figure of 4.6 billion board feet had been raised to about half the pre-war inventory of eighteen billion feet. At the end of 1950, the figure was estimated at nine billion board feet. Plywood and veneer stocks have never been more than insignificant in recent

²"Forests and National Prosperity, A Reappraisal of the Forest Situation in the United States," Forest Service, USDA, Misc. Pub. No. 668.

years due to incessant demand. Railroad ties, poles and piling stocks are about normal. The long seasoning period for these items is an important consideration in judging stocks. It is important that the budding National Production Authority controls do not interfere with the building of plentiful timber products inventories. Currently, there is some danger in this direction.

In order to assure the best and most efficient use of the forest resources and stocks of timber products on hand in another war emergency, the Forest Products Committee of the Munitions Board made the following immediate recommendations:³

Actions which should be started
in advance of an emergency

1. Establishment of a "critical list" of timber products.
2. Export controls for products on the critical list.
3. Stocking products on the critical list.
4. Building up, if feasible, mill and distribution yard stocks to form an adequate cushion against a sudden increase in military construction requirements.

³Interim Report to Munitions Board from the Forest Products Committee, July 19, 1946.

5. Accelerated research in the improved utilization of wood, development of substitutes, etc., as a means of conserving the supply of usable timber.
6. Intensive field surveys to determine location and volume of stands of specialty and quality timber.
7. A large-scale program of access road construction on public lands.
8. A comprehensive program of statistical information on forest products.
9. Advance planning of the timber controls to be instituted at the start of an emergency, including adequate estimation of military requirements by the Department of National Defense.

Actions which should be taken
at the onset of an emergency

1. Over-all allocation of all forest products in short supply.
2. Complete control over inventories.
3. Full coverage by appropriate conservation, limitation and preference rating orders.
4. Issuance of cutting directives to producers.
5. Subsidizing high-cost producers.
6. Subventions to producers to maximize production of critical items.

7. Special aids to producers in the procurement of stumpage.
8. Technical advice and assistance to producers.
9. Putting in the field an adequate force of foresters and other technicians to facilitate the various production-incentive programs, and to encourage leaving land in productive condition.

Since forest products production is intimately connected at all levels with the rest of the economy, the Forest Products Committee recognized that it should be equitably treated in the over-all control of industry. The nature of the timber-products industries is such that extraordinary measures are required in certain fields. They suggested the following actions:

1. Control over employment, wages and hours, so that skilled woods and mill workers can be retained, the necessary additional labor recruited, and pirating of labor by better-paid industries eliminated.
2. Control over all supplies and equipment, so that the necessary food, clothing, fuel, trucks, tractors, etc., can be channeled where most needed to increase production.
3. Control over all prices of timber products in

short supply, and possibly stumpage as well, as a part of over-all price control assumed to be necessary in an emergency, and to prevent serious dislocations in the flow of essential timber products to authorized consumers.

4. Control over all transportation facilities so that timber products can be moved without undue delay to authorized consumers and to consumption points where most urgently needed.

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APPENDIX

A SUMMARY OF CONTROL MEASURES IN WORLD WAR II APPLYING TO LUMBER AND OTHER FOREST PRODUCTS (EXCEPT WOOD PULP AND PAPER PRODUCTS)¹

The Office of Production Management, and later the War Production Board, the Civilian Production Administration, and the Office of Housing Expediter issued general priorities regulations under which business operated during the emergency.

The purpose of these regulations was to state the basic rules which applied to all business transactions unless covered by more specific regulations or superseding orders. In general, the priorities regulations established preference ratings, limitations on inventories, allocation classification systems, production requirements plans, and the procedures for obtaining and assigning preference ratings, duration of preference rating orders, acceptance of orders, sequence of delivery, appeals from specified orders, and other procedures necessary to the operation of the priorities system.

The Office of Price Administration was an agency established to control prices in the managed war-time economy in an effort to avoid inflation. The approach of this authority was similarly by a General Maximum Price Regulation from which later specific commodities were excepted and specifically controlled.

Specific regulation of forest products (except pulp and paper) by both production and price authorities are listed below:

War Production Board Conservation Orders - "M" Series (To curtail the use of critical materials)

- M-63 General Import Order. (December 1941). To conserve the supply and direct the distribution of strategic materials in which shortages exist and which are imported. The forest products covered and the data

¹From Materials Survey, U.S. Dept. Agriculture, 1950. Complete details on all control measures may be found in appropriate issues of the Federal Register.

when they were included in the order follow:

1. Logs and Lumber:
 - a. Balsa (June 1942)
 - b. Mahogany (June 1942)
 - c. Boxwood (June 1942)
 - d. Prima vera (April 1943)
 - e. Spanish cedar (April 1943)
 - f. Fir, other than Douglas-fir (April 1943)
 - g. Pine, other than northern white and Norway (April 1943)
 - h. Albarco (June 1943)
2. Tannin wood, bark, or extract:
 - a. Quebracho (June 1942)
 - b. Mangrove (May 1943)
3. Charcoal (June 1942)
4. Pulpwood (January 1944)

Order M-63 revoked May 1947.

- M-83. Teak. General Preference Order. (March 1942). To conserve the supply and direct the distribution of teak to meet military requirements, chiefly for ship decking. Revoked March 1943.
- M-122. Mahogany and Philippine Mahogany. General Conservation Order. (May 1942). To restrict the sale, delivery, production and use of mahogany, Philippine mahogany, and albarco to meet military requirements, chiefly for aircraft, boat, and ship building. Revoked September 1945.
- M-177. Balsa. General Conservation Order. (August 1942). To restrict the sale, delivery, production and use of balsa to meet military requirements, principally for life preserving equipment, aircraft, buoys, ship building, and gyroscopic equipment. Revoked July 1945.
- M-186. Sitka Spruce Logs. General Preference Order. (July 1942). To allocate and restrict the use of aircraft grades of Sitka spruce logs and lumber to meet military requirements. Revoked September 1945.
- M-208. Softwood Lumber. Conservation Order. (August 1942). To control the distribution and use of all types and grades of softwood lumber through the establishment of preference ratings. Revoked August 1944. Superseded by Order L-335.

- M-209. White Oak. General Conservation Order. (August 1942). To restrict the use of white oak logs wholly for fabrication into implements of war, chiefly aircraft, weapons, ships, tanks, and vehicles. Expired November 1943.
- M-228. Noble Fir Logs. General Preference Order. (September 1942). To allocate and direct, or prohibit, the use of Noble fir logs, or any part sawed therefrom, to meet military requirements, principally for aircraft. Noble fir was the most desirable alternate for Sitka spruce. Revoked May 1944. Renewed by establishment of Order M-386, February 1945.
- M-229. Western Hemlock Aircraft Logs. General Preference Order. (September 1942). To allocate and direct, or prohibit, the use of western hemlock aircraft logs, or any part sawed therefrom, to meet military requirements. Revoked April 1944.
- M-234. Douglas-fir Logs. General Preference Order. (September 1942). To allocate specific quantities of Douglas-fir logs, or any part sawed therefrom, to specific persons, and to direct or prohibit particular uses of such logs, or the production by any person of particular lumber items from such logs, to meet direct and indirect military requirements, such as aircraft material, pontoon lumber, ship decking, planking, and plywood. Revoked September 1945.
- M-248. Rattan. General Conservation Order. (October 1942). To restrict the sale, delivery, processing, and use of rattan (virtually all of foreign origin) to meet military requirements, chiefly for boat fenders, hospital wheel chairs, use in occupational therapy, parachute rings, and cap bands. Revoked September 1945.
- M-251. Pulpwood. General Preference Order. (October 1942). To control the distribution and use of pulpwood through allocation and to direct it to specific products or purposes; to require the establishment of reserve supplies; and to limit or prohibit particular uses of designated types in any area where a shortage is found to exist in order to meet military and essential civilian requirements. Revoked August 1945.
- M-277. Vegetable Tanning Materials. General Conservation Order. (February 1943). To restrict the distribution and use of domestic and foreign supplies of vegetable tanning materials to meet military and essential

civilian uses. The order covered the following domestic raw materials and extracts: California oak bark, cellulose sulphite by-products (deleted March 1943), chestnut oak bark, chestnut wood, hemlock bark, and sumac. Chestnut extract (indispensable in the tanning of shoe sole leather, transmission belting, and other heavy leather products) was placed under complete allocation January 1944. Revoked November 1946.

- M-279. Yellow Poplar. General Conservation Order. (February 1943). To allocate yellow poplar aircraft logs and direct their production into aircraft-type lumber and veneer to meet military requirements. Revoked November 1943.
- M-289. Charcoal. General Preference Order. (February 1943). To restrict distribution and use of charcoal by large users to meet military and essential civilian needs, chiefly for processing metals and curing meat and tobacco. Revoked September 1945.
- M-300. Chemicals. General Allocation Order.

Pine Tar. Schedule 14 (April 1944). To establish authority to allocate pine tar and tar oil obtained by distillation of pine wood by the retort or kiln process for purpose of meeting military and essential civilian uses, chiefly for rubber compounding and reclaiming, cordage for fishing nets, oakum for Navy ship building, and veterinary and pharmaceutical uses. Revoked July 1945. Superseded by Order M-340, September 1945.

Pine Oil. Schedule 73 (November 1944). To transfer the allocation provisions of Order M-365, governing pine oil, to Chemicals General Allocation Order M-300, and thereby simplify inventory controls. Revoked September 1945.

- M-340. Miscellaneous Chemicals. General Preference Order. To govern the purchase of miscellaneous chemicals which are ultimately delivered to or incorporated in materials for the military, certain other Government agencies, or any "preferred purpose" listed in the order.

Gum and Wood Rosins. (February 1945).

Pine Tar. (August 1945).

Revoked September 1945.

- M-343. Box-veneer. Conservation Order. (August 1943). To establish production quotas for producers of box-veneer and confine the sale of box-veneer produced to meet such quota to box manufacturers in order to meet requirements of export shipments and essential domestic uses. Revoked September 1945.
- M-358. Black Walnut Logs. Conservation Order. (December 1943). To prohibit the use of black walnut logs for uses other than gunstocks and gunstock flitches, and provide for release of material unsuitable for such uses. Revoked April 1944.
- M-359. Port Orford Cedar. Conservation Order. (November 1943). To allocate all Port Orford cedar logs, or any parts cut therefrom, and to direct or prohibit the use or production of such materials in order to meet direct and indirect military requirements, chiefly battery separators. Revoked July 1945.
- M-361. Southern Yellow Pine. Conservation Order. (December 1943). To provide, through certification or special authorization, for strict allocation of southern yellow pine lumber (except lath, shingles, and cross ties) produced by the larger mills for the purpose of conserving supplies of such lumber for direct and indirect war uses. Revoked August 1944. Superseded by Order L-335.
- M-364. Hardwood Lumber. Conservation Order. (December 1943). To provide, through certification or special authorization, for strict allocation of oak, ash, hickory, yellow birch, hard maple, rock elm, beech, and pecan (added later) lumber (excepting shingles, lathe, and cross ties) produced by the larger mills for the purpose of conserving supplies of such lumber for direct and indirect war uses. Revoked August 1944. Superseded by Order L-335.
- M-365. Pine Oil. Allocation Order. (May 1944). To establish authority to allocate pine oil and to restrict its distribution and use to meet military and essential needs, chiefly for disinfectant purposes. Revoked November 1944. Superseded by Order M-300, Schedule 73.
- M-386. Noble Fir Aircraft Logs and Lumber. General Limitation Order. (February 1945). To reestablish the authority to allocate and direct, or prohibit, the

use of Noble fir aircraft logs and lumber to meet military needs. Noble fir originally controlled in September 1942 by Order M-228 and revoked in May 1944. Revoked September 1945.

- M-387. Rosin. Conservation Order. (February 1945). To conserve gum and wood rosin by restricting distribution, use, and inventories to meet military and essential civilian needs. Revoked July 1946.

War Production Board and Civilian Production Administration Limitation Orders - "L" Series

(To curtail the production of particular products to save materials generally.)

- L-41. Construction. Conservation Order. (April 1942). To prohibit construction not essential to the war effort by requiring certification of new construction, and thereby conserve materials, equipment, and labor needed to meet war requirements. Revoked October 1945.
- L-121. Construction Lumber. Limitation Order. (May 1942.) For 105 days, to limit the sale and delivery of softwood construction lumber by producers (other than small producers), or authorized intervening persons, to military agencies and their contractors and subcontractors, excepting certain specified persons for specified uses, in order to meet the military construction program. Revoked September 1945. Superseded by Order M-208.
- L-150. Douglas Fir Plywood. Limitation Order. (June 1942). To restrict the production and distribution of moisture-resistant type of Douglas-fir plywood to specified types and sizes, with certain exceptions (primarily military orders); and later (June 1943) to require prior approval of production and delivery schedules in an effort to channel all softwood plywood production in Washington, Oregon and California to war and essential civilian uses. Revoked August 1945.
- L-150-a Softwood Plywood. Limitation Order. (December 1942). To limit sales, shipments, and deliveries of softwood through wholesale and retail channels to orders bearing ratings that were issued only to military and essential civilian needs. Revoked August 1945.

- L-150-b. Plywood. Limitation Order. (December 1942). To require that the newly developed Hutment grade of Douglas-fir plywood be produced in accordance with specifications in the Order and sold for the single purpose of constructing temporary military housing. This grade of plywood served as a substitute for other exterior types of plywood. Revoked June 1943.
- L-218. Douglas-Fir Lumber. Limitation Order. (October 1942). To make the maximum amount of Douglas-fir lumber (produced in Washington and Oregon west of the crest of the Cascade Mountain range) available to the armed forces by restricting the sale, shipments, and deliveries by producers to only the Central Procuring Agency of the Corps of Engineers and their agents, or through the War Production Board. Revoked August 1944. Superseded by Order L-335.
- L-227-b. Wood cased Pencils and Pen Holders. General Limitation Order. (September 1943). To control the production of wood cased pencils and pen holders through establishment of maximum quotas and to restrict the use of rubber and prohibit the use of certain critical metals in their manufacture. These products were previously controlled by Order L-227, issued December 1942. Revoked May 1945.
- L-232. Wooden Containers for Fresh Fruit and Vegetables. Limitation Order. (March 1943). To standardize and simplify specifications for wooden containers for shipping fruits and vegetables in order to facilitate the re-use of containers and thereby conserve lumber, metals, and manpower. Revoked August 1945.
- L-232-a. Wooden Shipping Containers for Oranges and Grapefruit. Supplemental Order. (November 1943). To limit the shipment in wooden containers of oranges and grapefruit originating in Texas, California, and Arizona to a certain percentage of their total production in order to conserve lumber. Revoked November 1944.
- L-260. Furniture. General Limitation Order. (February 1943). To prohibit new patterns of wood furniture, to reduce the existing patterns by two-thirds, and to limit the use of iron and steel in the manufacture of wood furniture. Included venetian blinds. Revoked April 1944.

- L-260-a. Furniture. General Limitation Order. (December 1943.) To restrict use of lumber for furniture and crating of furniture, and to limit the use of certain grades of seven particularly critical hardwoods needed for Army truck bodies and other important uses. Revoked August 1945.
- L-263. Matches. Limitation Order. (February 1943). To restrict the size of matches and the use of materials therein for the purpose of conserving lumber, chemicals, wood pulp, and wire. Revoked August 1945.
- L-283. Brooms. General Conservation Order. (August 1943). To limit the amount of metals used in brooms, to restrict the diameter of broom handles, the number of coats of finish, and the number of sewing seams, and to limit the number of designs in which various types of brooms can be made. Revoked March 1944.
- L-285. Dogwood. Limitation Order. (April 1943). To limit the use of dogwood logs, cants, flitches, and blocks to the manufacture of shuttles. Revoked August 1945.
- L-290. Western Lumber. Limitation Order. (May 1943). To restrict the sale, shipment, or delivery of the following species produced by all except small mills in the twelve western states: Ponderosa pine, Idaho white pine, sugar pine, lodgepole pine, white fir, Western white spruce, and Engelmann spruce to the Central Procuring Agency of the Corps of Engineers, or their Agents, or to persons specifically authorized by the War Production Board. Revoked August 1944. Superseded by Order L-335.
- L-335. Lumber Consumers' Requirements Order. (March 1944). (In June 1944 and thereafter known as "Lumber Control Order.") Originally, to require all major consumers of lumber to file applications giving their requirements for second and third quarters of 1944. The comprehensive revision of June 1944 set up procedures for all but the smallest sawmills (producing 100,000 board feet of lumber or less annually) to deliver lumber; for distributors receiving and delivering lumber, and for all consumers receiving lumber; and to control, through quarterly authorization, the amount of lumber that large industrial consumers may receive. Revoked September 1945.

Directions 1-5 to L-335. (July 1944). Provide that sawmills over certain sizes must give military

orders precedence up to specified percentages of their anticipated monthly shipments of certain species. The species covered by the five directions are:

Direction 1: Douglas-fir, white fir, noble fir, Sitka spruce (except aircraft grade) and hemlock produced in Oregon and Washington west of the crest of the Cascade Mountain range. Revoked August 1945.

Direction 2: Ponderosa pine, sugar pine, lodgepole pine, Idaho white pine, white fir, Douglas-fir, Western white spruce, Engelmann spruce, and larch produced in the area generally known commercially as the Western pine area.

Direction 3: Redwood produced in California. Revoked August 1945.

Direction 4: Southern yellow pine produced in eleven southern states. Revoked August 1945.

Direction 5: Red or Yellow cypress, chiefly produced in South Carolina, Florida, Georgia, and Louisiana. Revoked August 1945.

Direction 1A to L-335. (April 1945). To provide that sawmills covered by Direction 1 must manufacture at least forty percent of their monthly production of Douglas-fir, white fir, and West Coast hemlock in one-inch boards and at least twenty-five percent in two-inch dimension. Revoked August 1945.

Direction 2A to L-335. (December 1944). To limit the receipt of Western pine lumber to designated claimants and consumers having specific authorization from the War Production Board. Revoked August 1945.

Direction 6. (August 1944). To provide for the sale of No. 4 or lower grades of Douglas-fir, southern yellow pine, western hemlock, western red cedar, Sitka spruce, and No. 3 or lower grades of all species of hardwood on uncertified orders. Revoked August 1945.

Direction 7. (July 1944). To permit sawmills not covered by Directions 1 to 5 to accept and make delivery on uncertified and unrated orders of lumber. Revoked August 1945.

Direction 8. (July 1944). To establish the procedure by which lumber distributors obtained a limited amount of lumber intended for sale on uncertified and unrated orders, thereby providing for the needs of the small private consumer and the small industrial consumer without ratings. Revoked August 1945.

(L-335 cont'd.)

Direction 8A to L-335. (September 1944). To permit lumber distributors, for a four-months period, to deliver to small private consumers and small industrial consumers accumulated stocks of slow moving items which were not adaptable to war uses, and to permit sawmills and distributors in certain areas to dispose of their excess stocks of Douglas-fir, larch, and red cedar to farmers in those areas. Revoked January 1945.

Direction 9. (July 1944). To prohibit the use of certain grades of white oak, Idaho white pine, spruce, ponderosa pine, sugar pine, white fir, and red cypress in the manufacture of 26 types of products; to prohibit the use of any species except birch, beech, maple, pecan, and oak in the manufacture of hardwood flooring; and to prohibit the use of certain species and grades for dunnage. Revoked August 1945.

Direction 10. (July 1944). To define and clarify what is meant by "receipts of lumber" during third quarter, 1944. Revoked January 1945.

Direction 11. (July 1944). To provide that any sawmill may deliver ash lumber to any ash specialist without restriction. Revoked August 1945.

Direction 14. (August 1944). To allow large consumers of lumber to receive a part of their fourth-quarter allotments of hardwood during the third quarter. Revoked January 1945.

Direction 15. (September 1944). To allow delivery of veneer flitches to manufacturers without regard to the provisions of L-335, and to clarify the reporting requirements of veneer manufacturers. Revoked January 1945.

Direction 16. (September 1944). To permit farmers to receive without certification up to 5,000 board feet of lumber annually if produced from trees cut from their own farms. Revoked January 1945.

Direction 17. (April 1945). To require wholesale lumber dealers and commission men handling southern yellow pine lumber to report to the War Production Board their monthly volume of sales of such lumber to show how much was going to various uses. Revoked August 1945.

Direction 18. (May 1945). To permit distribution yards with common ownership to pool certified orders. Revoked August 1945.

L-344. Picker Stick Blanks. Limitation Order. (April 1945). To prohibit the use of hickory picker stick blanks for any purpose except the manufacture of picker sticks. Revoked August 1945.

- L-350. Softwood Veneer. Limitation Order. (August 1945). To channel softwood veneer produced in Washington, Oregon, and California to softwood plywood manufacturers and to box manufacturers and to limit the use of such veneer solely to the manufacture of plywood and shipping containers. Revoked August 1945.
- L-358. Softwood Plywood. Limitation Order. (October 1946). To provide that manufacturers of softwood plywood must produce and reserve a percentage of their production in construction and door panel grades; to require that a part of the reserve be delivered to distributors on unrated and uncertified orders, and the balance on orders covering highly essential projects (M M ratings) and on certified orders from distributors and manufacturers of certain housing products and certain other essential items. Revoked March 1947.
- L-359. Lumber, Hardwood Flooring and Millwork. Limitation Order. (October 1946). To provide that sawmills shall produce a percentage of their total production of lumber in housing construction lumber and hardwood flooring lumber which is to be held for certified and rated orders from distributors and manufacturers of certain housing projects, and other items. Revoked March 1947.

Civilian Production Administration - Veterans'
Emergency Housing Program Orders - VHP & PR Series
 (To divert critical materials from deferable or
 less essential construction to veterans' housing.)

- PR-33. Veterans' Emergency Housing Program. (December 1945). To assist private builders, educational institutions and others to build moderate-cost housing accommodations for which veterans of World War II would be given preference by assigning an HH preference rating for certain materials (including lumber, hardwood flooring, millwork, and softwood plywood) needed for construction. Specific directions to PR-33 applying to forest products (and the purpose of the direction) are as follows:

Direction 1 to PR-33. Lumber, Hardwood Flooring, and Millwork. (January 1946). To require sawmills (cutting annually over two million board

feet of softwood or one million board feet of hardwood) to produce a percentage of their total production in housing construction lumber and hardwood flooring for certified orders (with an HH rating) from distributors, prefabricators, hardwood flooring manufacturers, and housing contractors. Revoked November 1946.

Direction 1A to PR-33. Softwood Plywood. (March 1946). To require manufacturers of softwood plywood to produce a percentage of their total production in construction and door panel grades and reserve a percentage of those grades for certified orders (with an HH rating) from prefabricators, distributors, stock cabinet manufacturers, and housing contractors. Revoked October 1946.

Direction 8 to PR-33. Prefabricated Housing. (March 1946). To explain how manufacturers of prefabricated houses, sections or panels, may get HH ratings for certain materials, including lumber, millwork, hardwood flooring, and softwood plywood. This direction was transferred to OHE in March 1947 and revoked in April 1948.

VHP-2. General Restrictions on Hardwood Lumber. (July 1946). To prohibit builders from using beech, birch, hard maple, oak, or pecan boards or dimension lumber for framing, wall or roof sheathing, boxing, siding, or subflooring in any house, building, or other structure in order to conserve the short supply of such species. Revoked February 1947.

VHP-5. Douglas-fir and Western Pine Shop Lumber. (April 1947). To restrict the delivery of a large portion of certain sizes and grades of Douglas-fir and western pine shop lumber to millwork or cut-stock manufacturers. Revoked June 1947.

Office of Housing Expediter Veterans' Emergency Housing Program Orders - EPPR Series

(To stimulate production of building materials by providing premium payments for materials produced above established quotas.)

EPPR-2. Softwood Plywood. (June 1946). To stimulate additional production of softwood plywood by providing for premium payments on peeler logs consumed in additional production of softwood plywood above

established quotas and to establish such quotas, and the methods, procedures, and conditions under which premium payments may be obtained. Revoked April 1948.

- EPPR-4. Standing Timber on State Owned Lands. (July 1946). To stimulate additional production of lumber and other forest products from standing timber on State owned lands by providing for premium payments to states to enable them to utilize additional facilities for making such timber ready for sale. Revoked April 1948.
- EPPR-6. Hardwood Flooring - Southern Area. (August 1946). To stimulate additional production of hardwood flooring in the southern area by providing for premium payments on production of such flooring above established quotas. Revoked April 1948.
- EPPR-7. Hardwood Flooring - Northern Area. (August 1946). To stimulate additional production of hardwood flooring in the northern area by providing for premium payments on production of such flooring above established quotas. Revoked April 1948.

OFFICE OF PRICE ADMINISTRATION MAXIMUM PRICE REGULATIONS

(To establish price ceilings on individual products in an effort to curb inflation.)

Primary Forest Products¹

			Effective Date
MPR	54	Douglas-fir peeler logs (Revoked June 1942. Superseded by MPR 161.)	December 1941
MPR	161	West Coast logs	December 1941
MPR	216	Eastern railroad ties	September 1942
MPR	257	Pulpwood produced in Lake States	November 1942
MPR	284	Western primary forest products (Revoked September 1944. Super- seded by MPRs 554, 555, and 556.	
MPR	313	Veneer logs	February 1943
MPR	324	Eastern fence posts	February 1943
TMPR ²	30	Pulpwood cut in Southeastern States	March 1943
MPR ³	348	Eastern logs and bolts	April 1943
GMPR		Order No. 16. Picker stick blanks produced in North and South Carolina	April 1943
MPR	361	Pulpwood produced in New York and northern New England States	April 1943
MPR	387	Pulpwood produced in South Caro- lina, Georgia, and Florida	May 1943
MPR	388	Pulpwood cut in certain South- eastern States	May 1943
TMPR	32	Pulpwood cut in designated Eastern States	June 1943

¹Prior to the establishment of specific maximum prices, most of the primary timber products (poles, posts, piling, split stock, mine timbers, and similar semi-finished timber products) became subject to the General Maximum Price Regulation in June 1942. Cordwood sold for firewood was subject to GMPR, but cordwood sold for processing into lumber or pulp was not. Logs sold for processing into lumber, veneer, etc., also was not subject to GMPR. For each individual seller, the maximum prices for any of the products subject to GMPR could be no higher than the highest price he charged for delivery of the product in March 1942.

²Temporary maximum price regulation.

³General maximum price regulation.

(Primary Forest Products cont'd)

			94 Effective Date
MPR	410	Pulpwood produced in designated States west of the Mississippi River	June 1943
MPR	433	Pulpwood produced in North Carolina and certain portions of Virginia	July 1943
MPR	437	Pulpwood produced in eastern Virginia	July 1943
MPR	460	Western timber	August 1943
MPR	464	Pulpwood cut in designated Eastern States	August 1943
MPR	491	Pressure preservative treatment of forest products and pressure treated forest products	November 1943
MPR	503	Western contract logging services	January 1944
MPR	530	Import prices for pulpwood produced in the Canadian Provinces of Quebec, New Brunswick, and Nova Scotia	May 1944
MPR	533-1	Central logs	May 1944
MPR	533-2	Lake States logs	May 1944
MPR	533-3	Appalachian logs	May 1944
MPR	533-4	Southern logs	May 1944
MPR	533-5	Northeastern logs	May 1944
MPR	533-6	Florida logs	May 1944
MPR	534-1	Black walnut logs	May 1944
MPR	534-2	Hickory and ash logs and other specialty woods	May 1944
MPR	535-1	Insulation and felt cordwood and related products	May 1944
MPR	535-2	Lake States cordwood	May 1944
MPR	535-3	Excelsior wood	May 1944
MPR	535-4	New England cordwood	May 1944
MPR	535-5	Chestnut cordwood	May 1944
MPR	535-6	Stave and heading bolts	May 1944
MPR	535-7	Chemical cordwood	May 1944
MPR	536	Western fence posts	May 1944
MPR	554	Western red cedar poles and piling	September 1944
MPR	555	Western poles and piling	September 1944
MPR	556	Western railroad ties and wood mine materials	September 1944
MPR	558	Eastern wood mine materials and industrial blocking	September 1944
MPR	559	Eastern poles and piling	September 1944
MPR	560	Northern white cedar poles and piling	September 1944
MPR	565	Pulpwood contract logging services in designated Eastern States	November 1944

Eastern Softwood Lumber and Millwork

			<u>Effective date</u>
MPR	19	Southern pine lumber	September 1941
MPR	19A	Log-run southern pine lumber	April 1944
MPR	219	Northeastern softwood lumber	September 1942
MPR	222	Northern softwood lumber	September 1942
MPR	293	Stock millwork	January 1943
MPR	381	Stock screen goods	May 1943
MPR	412	Tidewater red cypress lumber	June 1943
MPR	454	Aromatic red cedar lumber	August 1943
MPR	483	"General Manager Type" grain doors and temporary coal doors for box cars	October 1943
MPR	513	Yellow cypress lumber (Revoked August 1945. Superseded by MPR 97).	February 1944
MPR	525	Jobber sales of stock millwork	April 1944
MPR	539A	Custom milling and kiln drying of softwood and hardwoods in the Northeastern area	September 1944
MPR	539B	Custom milling and kiln drying of softwoods and hardwoods in the Southern area	March 1945
MPR	539C	Custom milling and kiln drying of softwoods and hardwoods in Mid- west and Great Lake States	March 1945
MPR	601	Softwood mouldings	November 1945
MPR	608	Special millwork	May 1946
OSA ⁴		Directive 94 Southern pine lumber	January 1946

Western Softwood Lumber and Millwork

MPR	13	Douglas-fir and other softwood ply- wood	August 1941
MPR	26	Douglas-fir and other West Coast lumber	October 1941
MPR	44	Douglas-fir doors	December 1941
MPR	109	Aircraft lumber (Revoked October 1945. Super- seded by MPR 290.)	April 1942
MPR	164	Western softwood shingles	June 1942
MPR	253	Redwood lumber and millwork	November 1942
MPR	290	Sitka spruce lumber	January 1943
MPR	402	Western red cedar lumber	June 1943

⁴Office of Stabilization Administrator.

Western Softwood Lumber and Millwork (cont'd)

			Effective date
MPR	539	Custom milling and kiln drying of Western softwoods	June 1942
MPR	589	Douglas-fir stock millwork	June 1945

Hardwood Lumber and Miscellaneous Wood Products

MPR	97	Southern hardwood lumber	February 1942
MPR	146	Appalachian hardwood lumber	May 1942
MPR	155	Central hardwood lumber	June 1942
MPR	196	Turned or shaped wood products	August 1942
MPR	217	Walnut lumber and walnut gun-stock blanks	September 1942
MPR	218	Eastern wooden mine material and industrial blocking (Revoked November 1943. Superseded by MPR 216 and each of the hardwood lumber regulations.)	September 1942
MPR	223	Northern hardwood lumber	September 1942
MPR	281	Navy oak ship stock	December 1942
MPR	338	Aircraft veneer	March 1943
GMPR		Supplementary Regulation No. 14. Grain doors sold to railroads	March 1943
MPR	432	Northern hardwood flooring	July 1943
MPR	458	Oak, pecan and miscellaneous hardwood flooring	August 1943
MPR	501	Hardwood small dimension	December 1943
MPR	538	Commercial veneer	June 1944
MPR	568	Hardwood plywood	December 1944
MPR	603	Suprlus lumber	November 1945
MPR	611	Mahogany lumber	June 1946

Distribution

MPR	215	Distribution yard sales of softwood lumber	September 1942
MPR	467	Distribution yard sales of hardwood lumber	September 1943

Wood Containers

MPR	117	Used egg cases and used component parts	April 1942
MPR	160	Seasoned wooden agricultural containers (Revoked February 1943. Superseded by MPR 320.)	June 1942

Wood Containers (cont'd)

			Effective date
MPR	176	Box grade veneer	July 1942
MPR	186	Western wooden agricultural containers	July 1942
MPR	195	Industrial wooden boxes	August 1942
MPR	320	Eastern and central wooden agricultural containers	February 1943
MPR	342	Nail kegs, staves and heading	February 1943
MPR	424	Tight cooperage stock and sawed tight cooperage	April 1943
MPR	434	Used fruit and vegetable containers	July 1943
MPR	481	Slack cooperage and cooperage stock	April 1943
MPR	485	Wirebound boxes	June 1943
MPR	520	West Coast cooperage	March 1944
MPR	524	Used tight cooperage	April 1944
MPR	593	Used slack cooperage	August 1945

Naval Stores

GMPR	Am.	5 Wood and gum naval stores	June 1942
MPR	179	Pine Oil	July 1942
MPR	297	Natural resins	January 1943
MPR	446	Pine tar and pine tar oil	August 1943
TMPR	36	Gum rosin	June 1944
MPR	561	Gum rosin	September 1944

Other Forest Products

MPR	312	Maple sugar and syrup	February 1943
MPR	352	Chestnut extract	April 1943
MPR	431	Charcoal	July 1943
MPR	531	Imported vegetable tanning materials	May 1944
MPR	551	Certain sales of hemlock and chestnut oak barks	August 1944

All maximum price regulations not previously revoked were revoked on November 10, 1946.